Brian McInerney
Hydrologist
National Weather Service

Hydrologic Outlook
May 2006

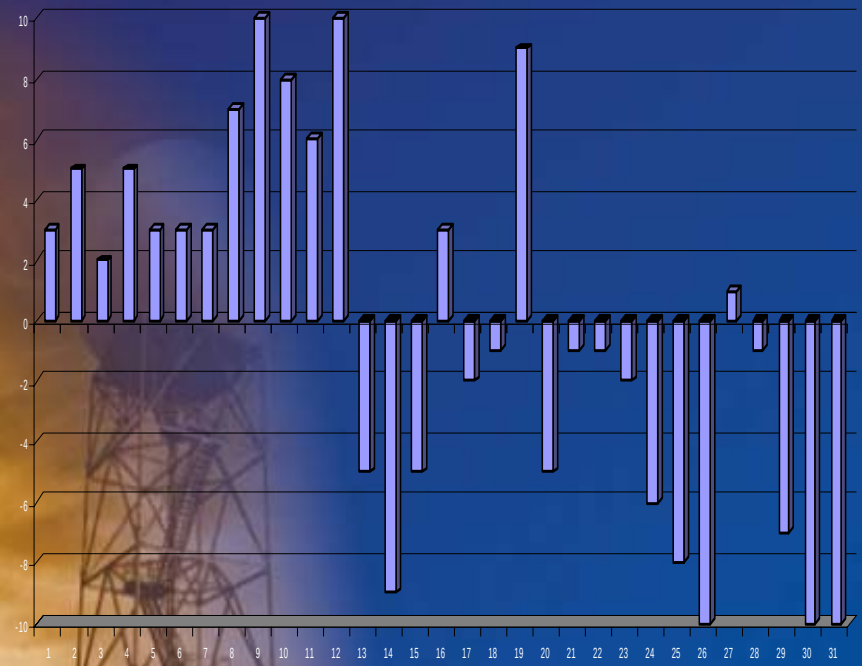
Hydrologic Outlook

- Temperature

March

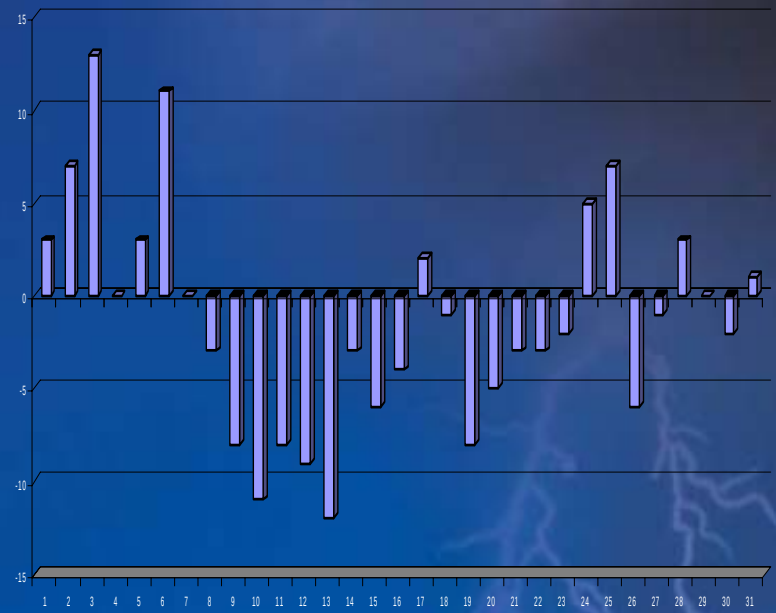
Salt Lake City Temperature Departure from Normal

- March 1983



- 0.1 degrees cooler than average

- March 2006

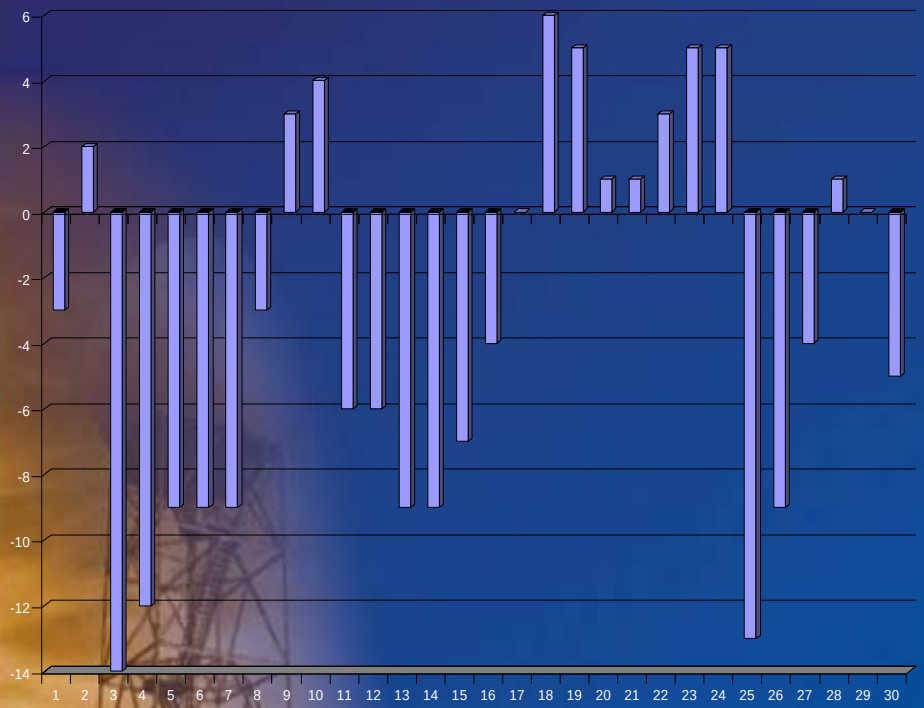


- 1.0 degrees warmer than average

April

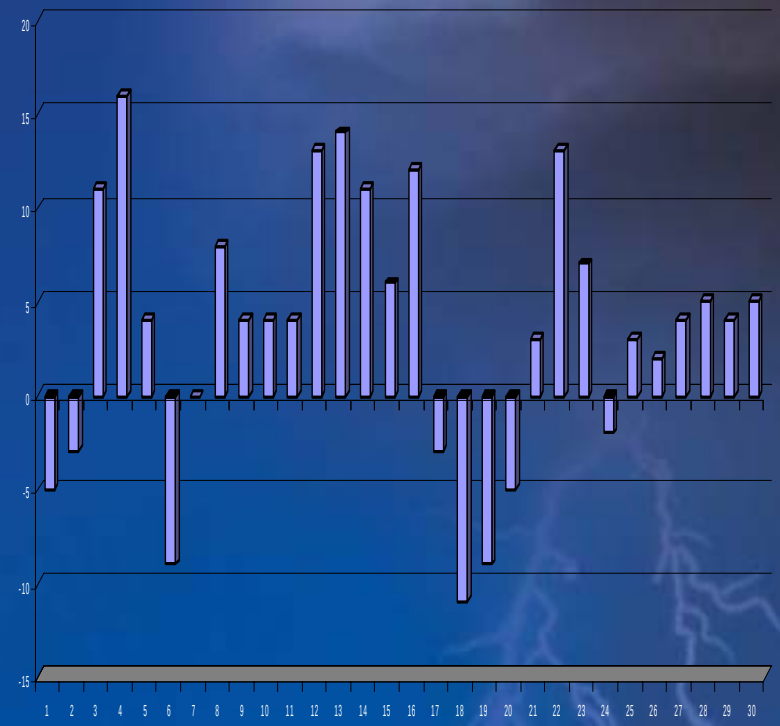
Salt Lake City Temperature Departure from Normal

- April 1983



- 3.3 degrees cooler than average

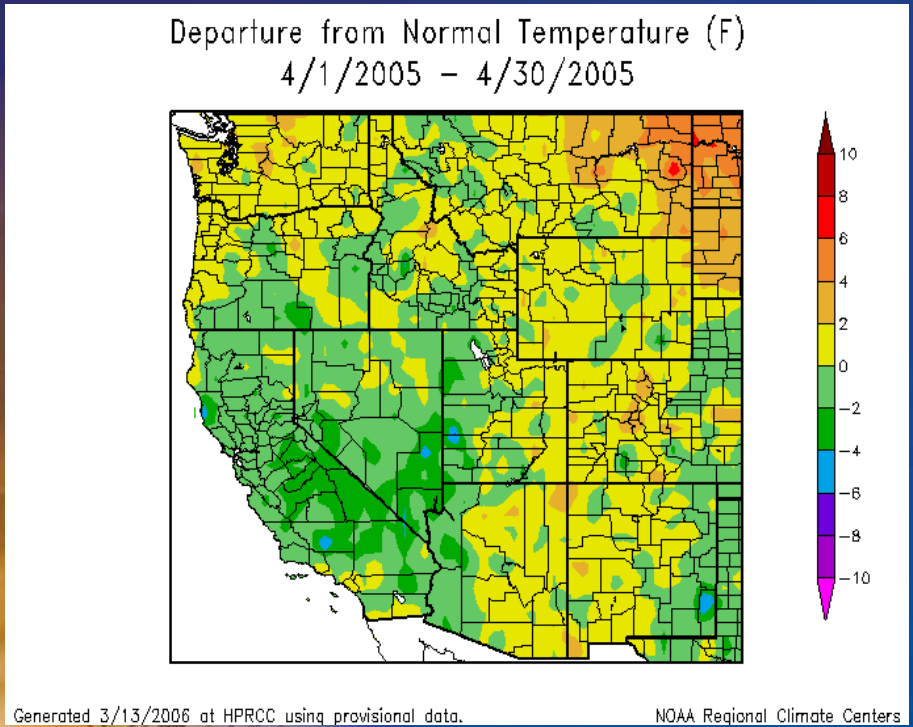
- April 2006



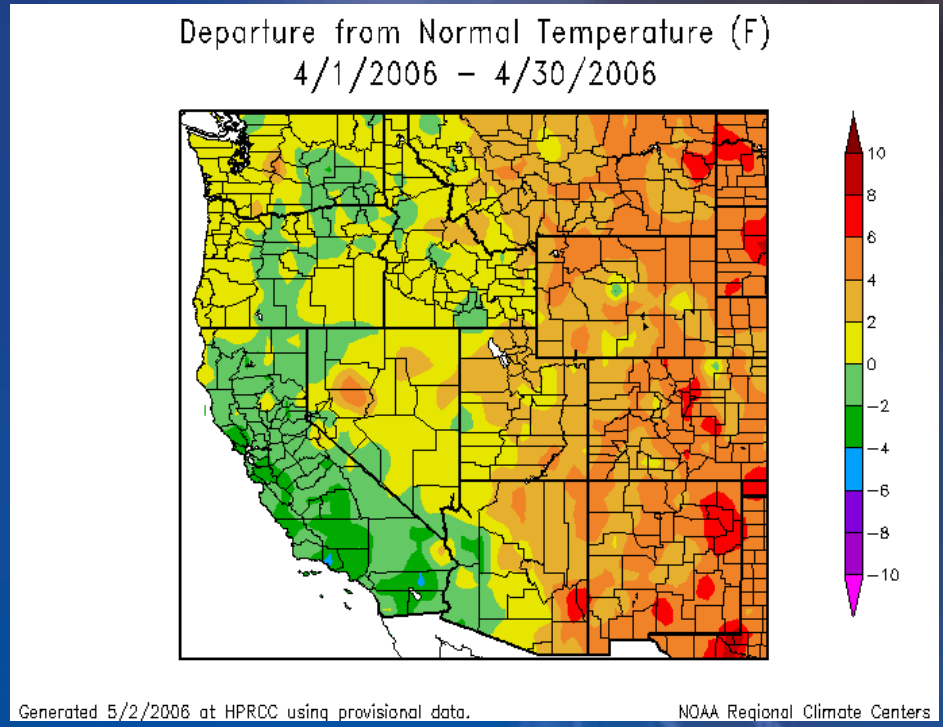
- 3.5 degrees warmer than average

Western US Temperature Departure from Normal

- April 2005

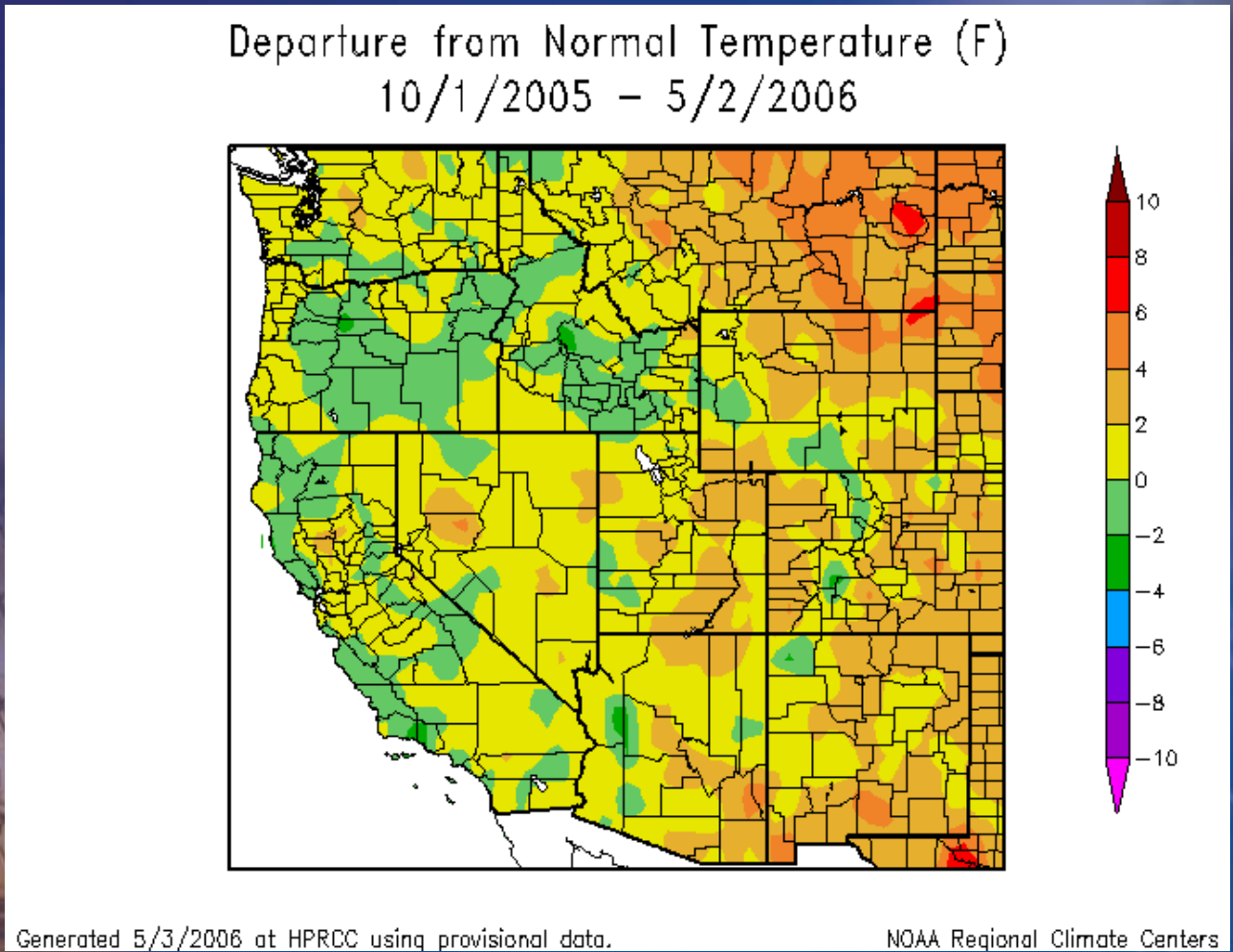


- April 2006



Western US Temperature Departure from Normal

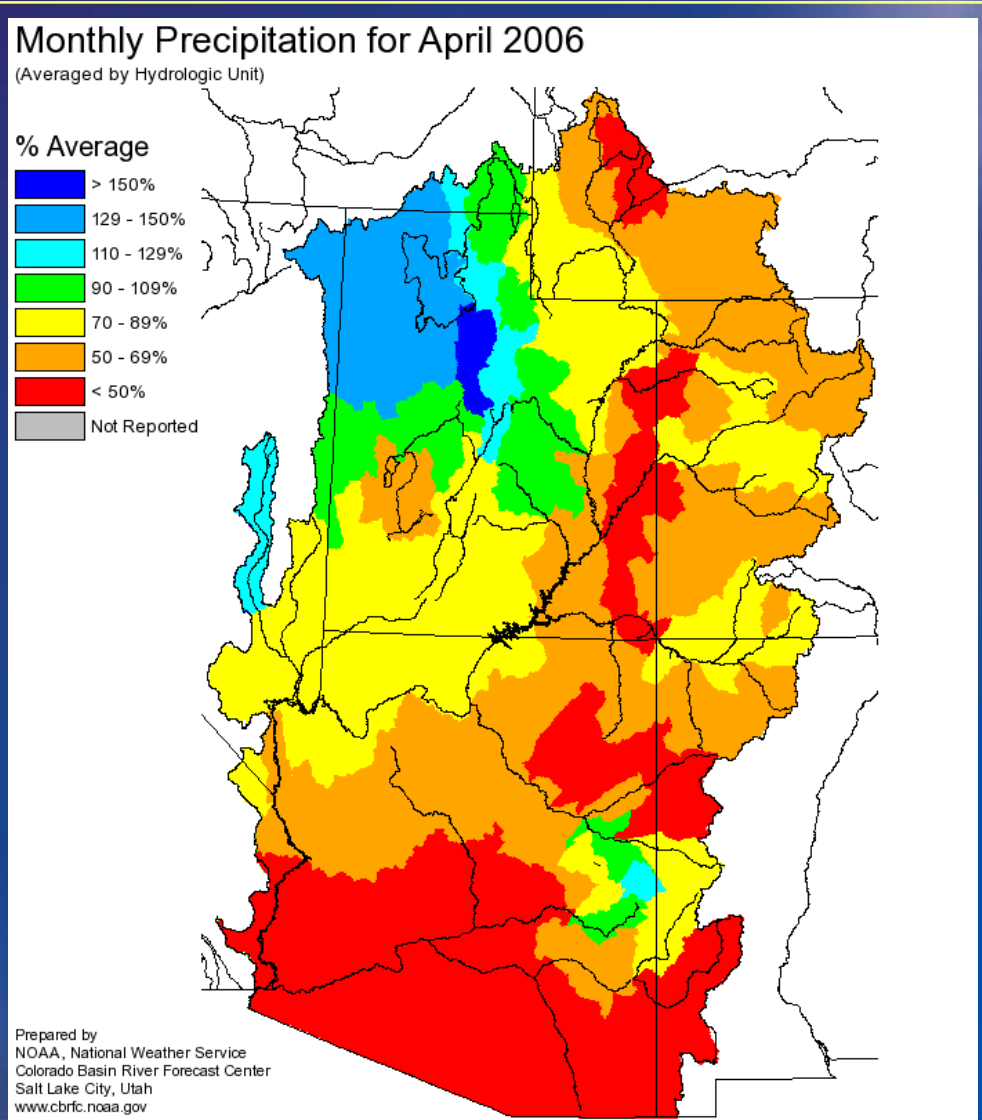
- October, 2005 - May 2nd, 2006



Hydrologic Outlook

- Precipitation

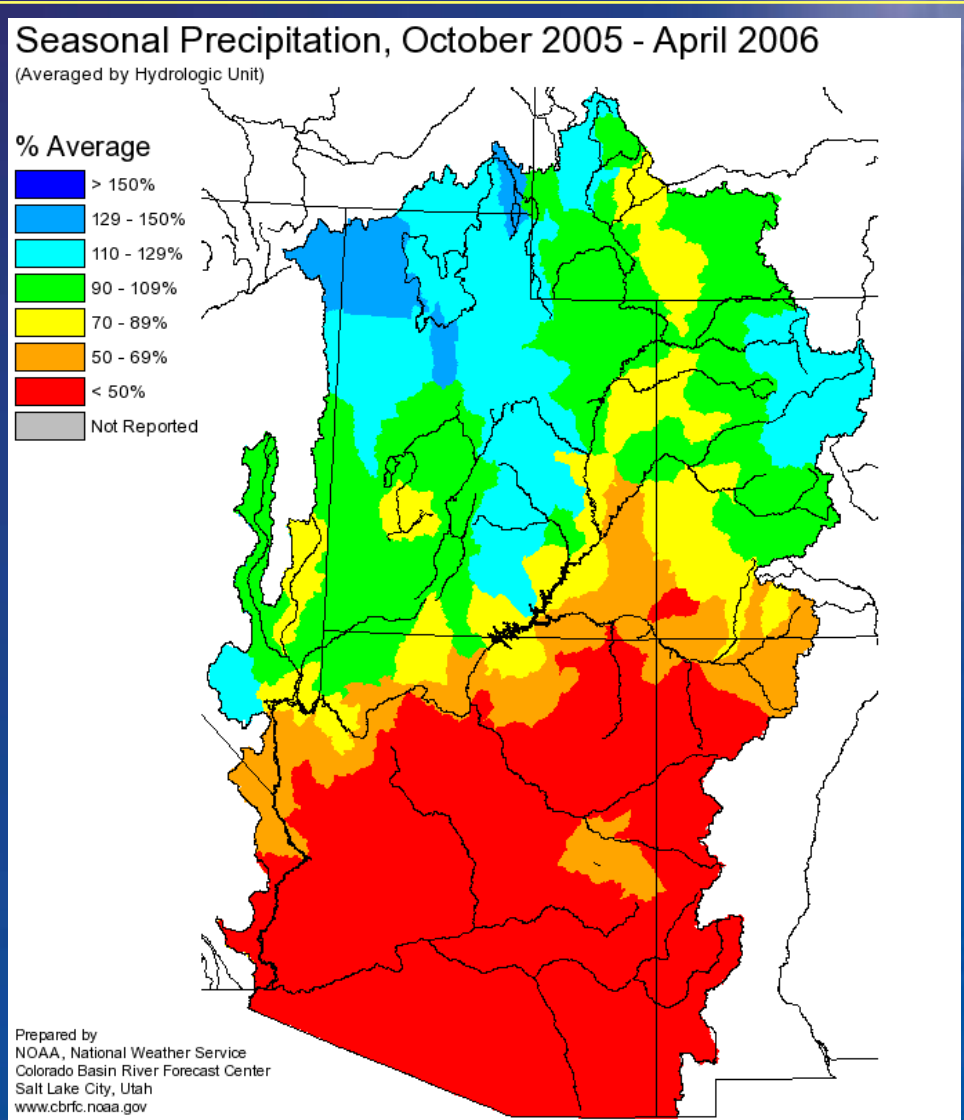
Precipitation



Utah and neighboring states

Seasonal Precipitation

2006 Water Year

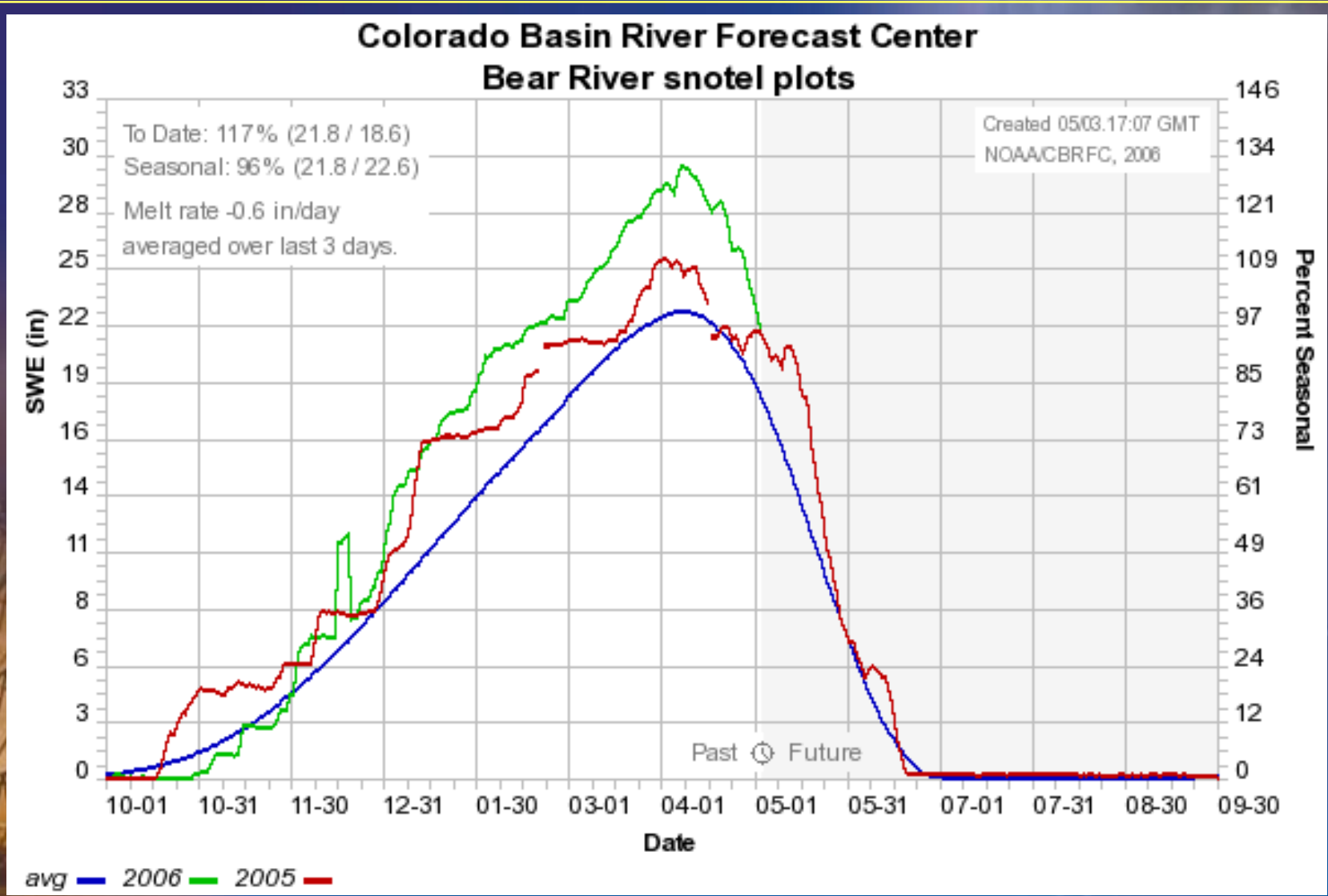


Hydrologic Outlook

- Snowpack

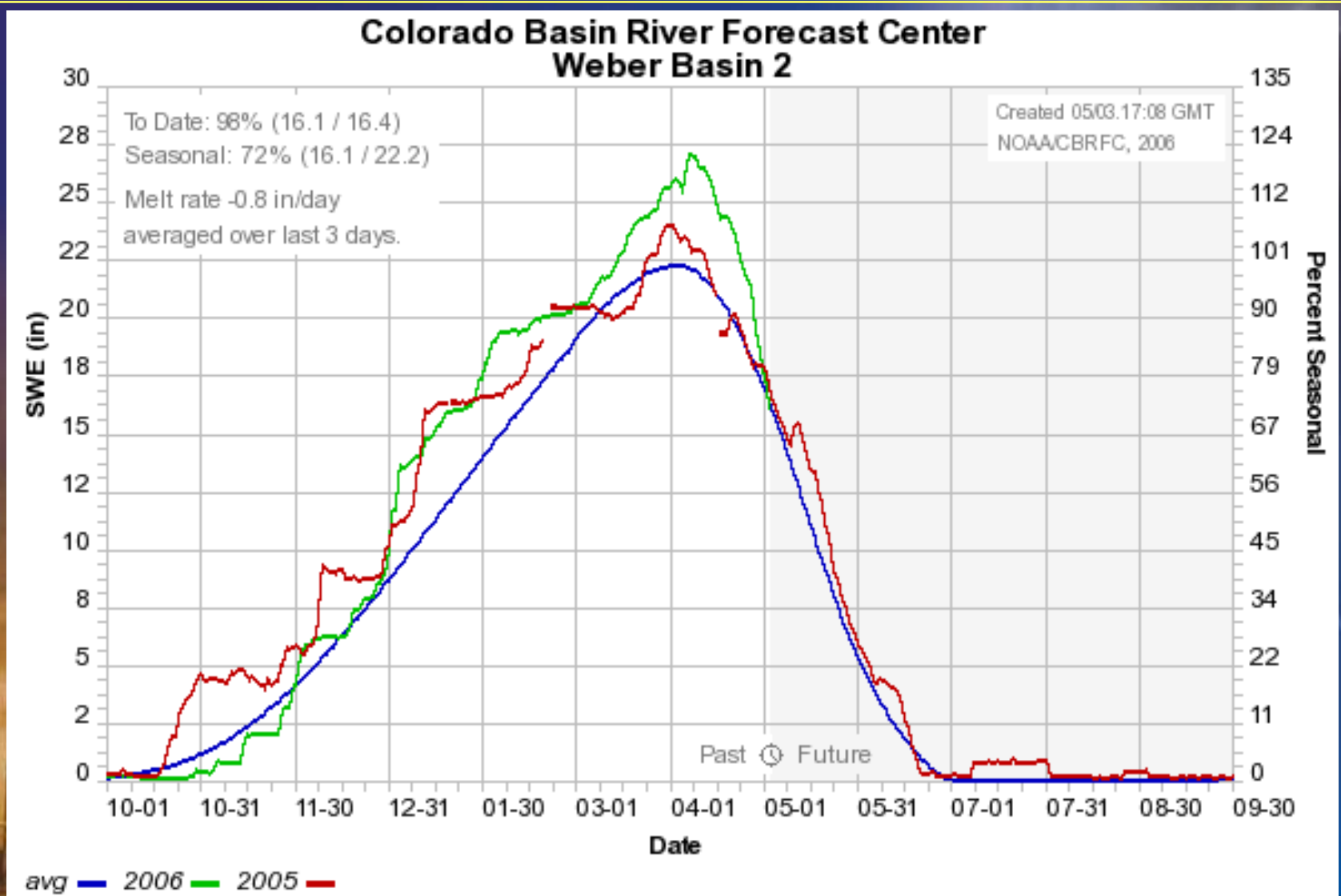
Bear River Basin Snowpack

Compared to 2005



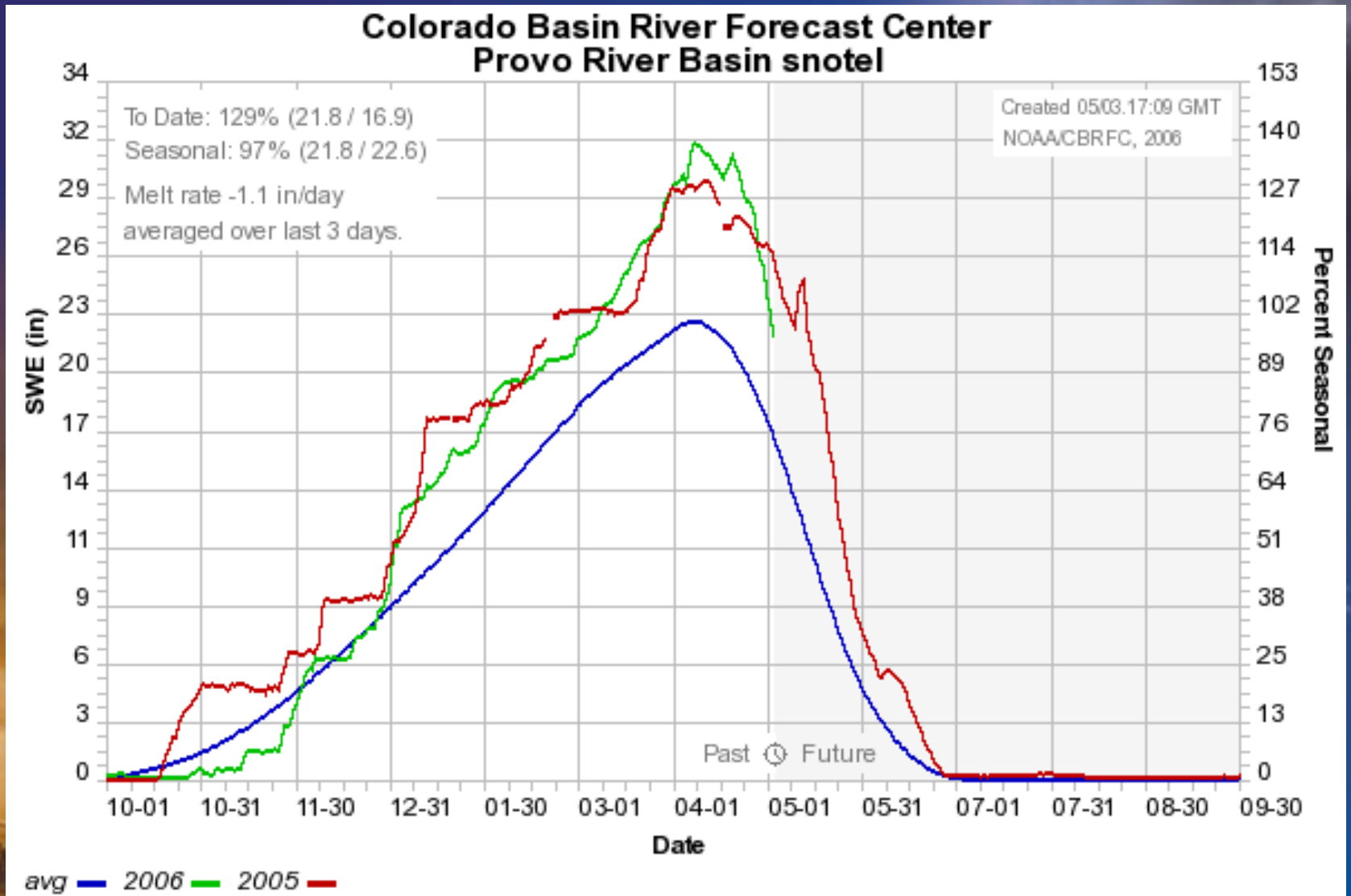
Weber River Basin Snowpack

Compared to 2005



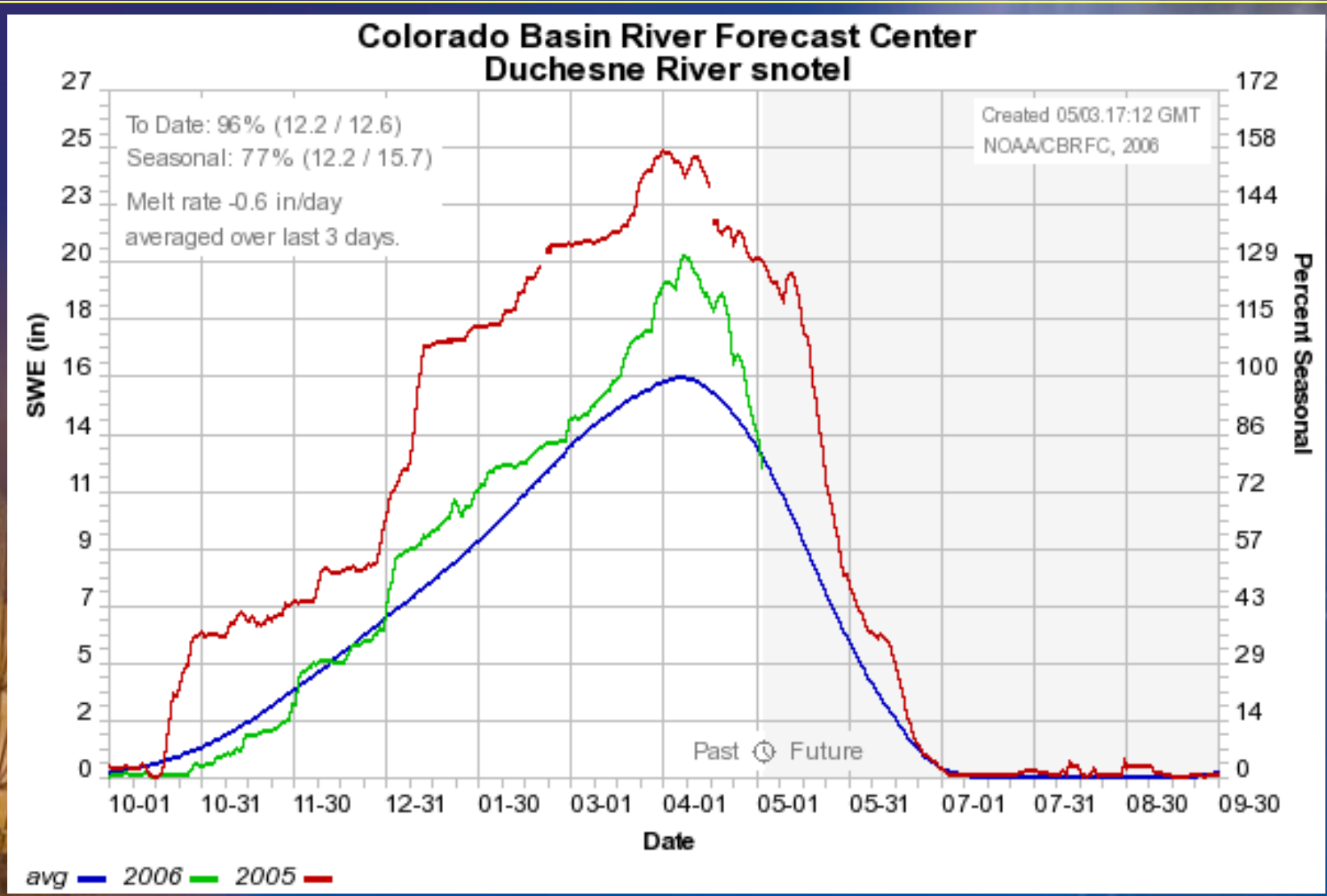
Provo River Basin Snowpack

Compared to 2005



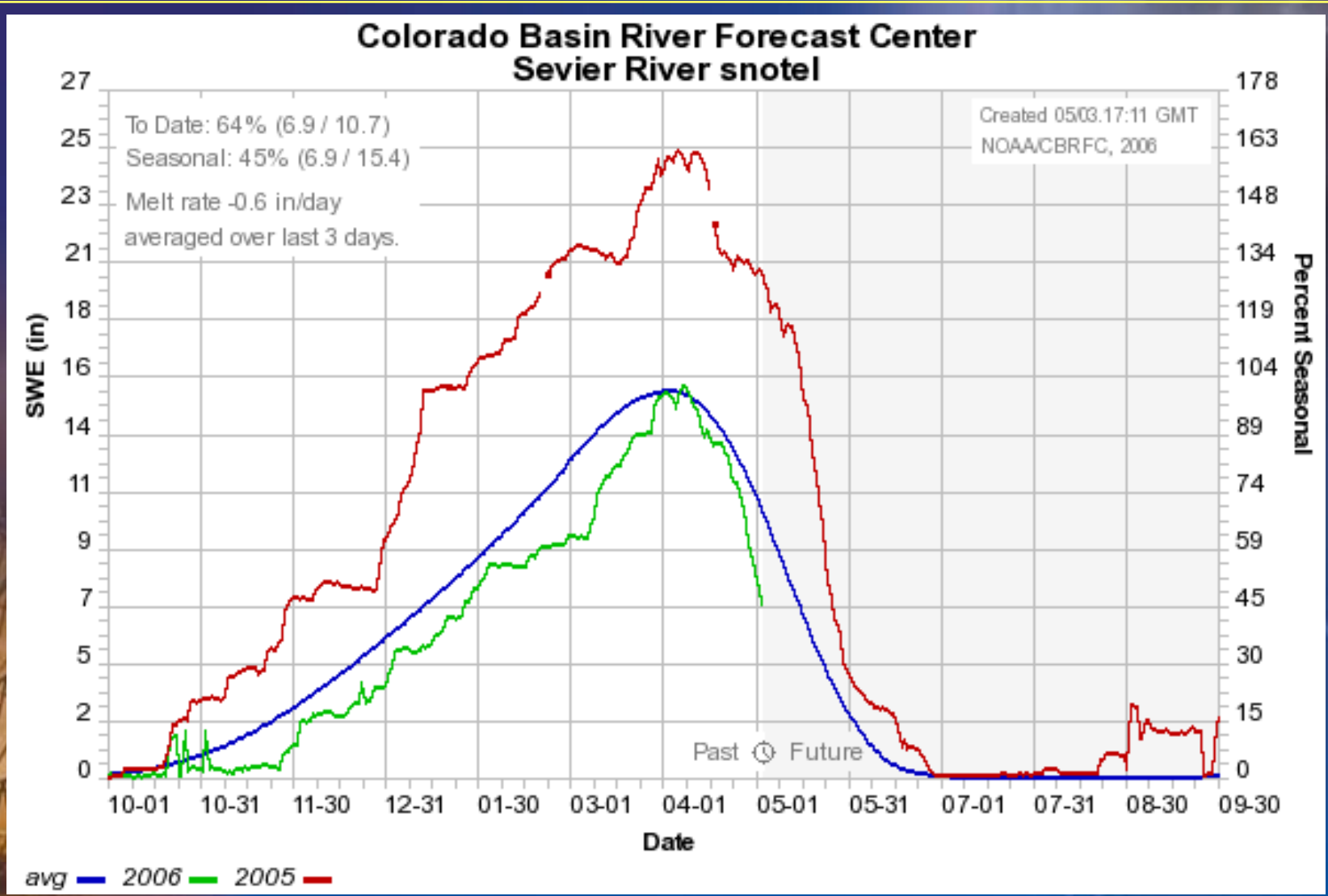
Duchesne River Basin Snowpack

Compared to 2005



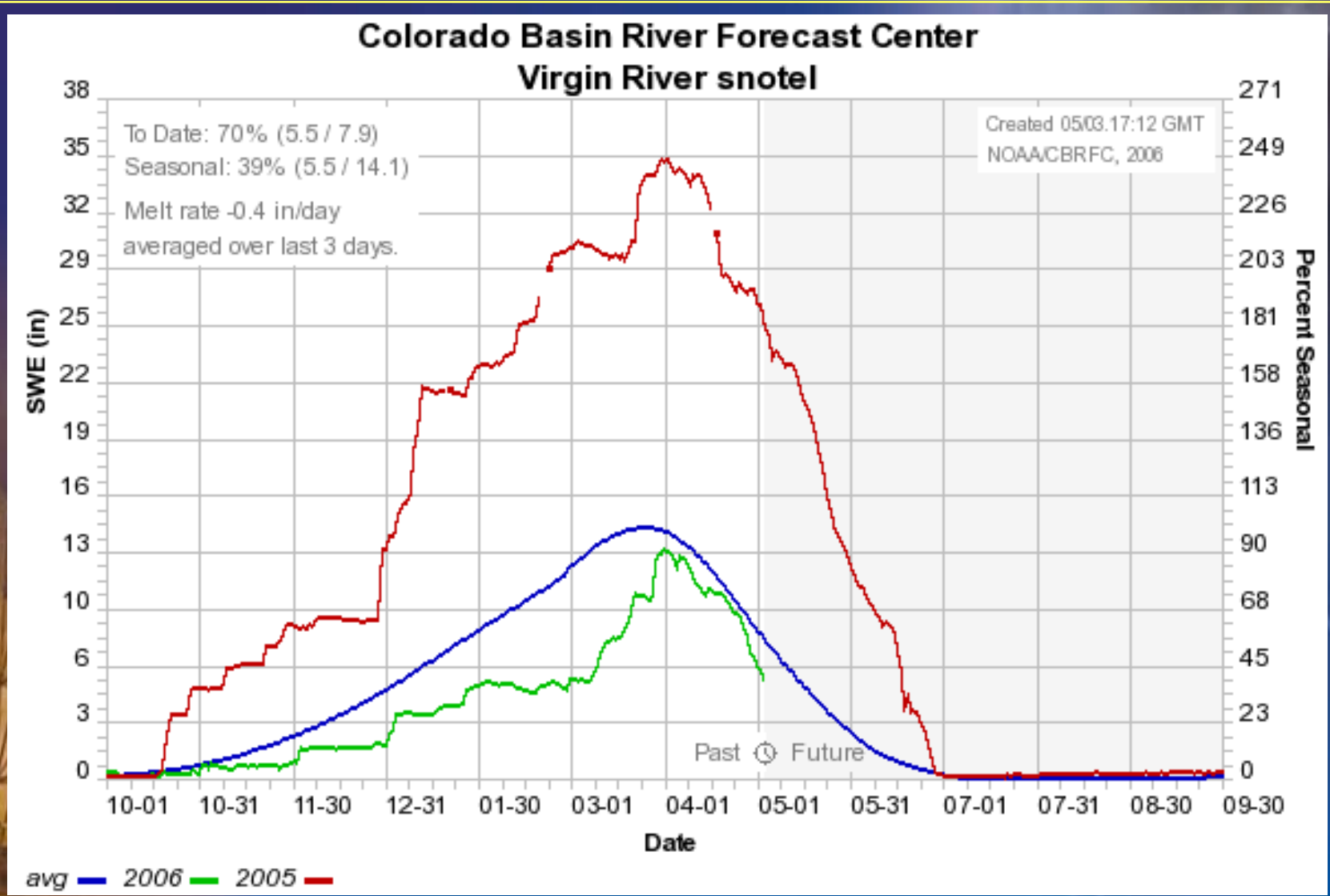
Sevier River Basin Snowpack

Compared to 2005



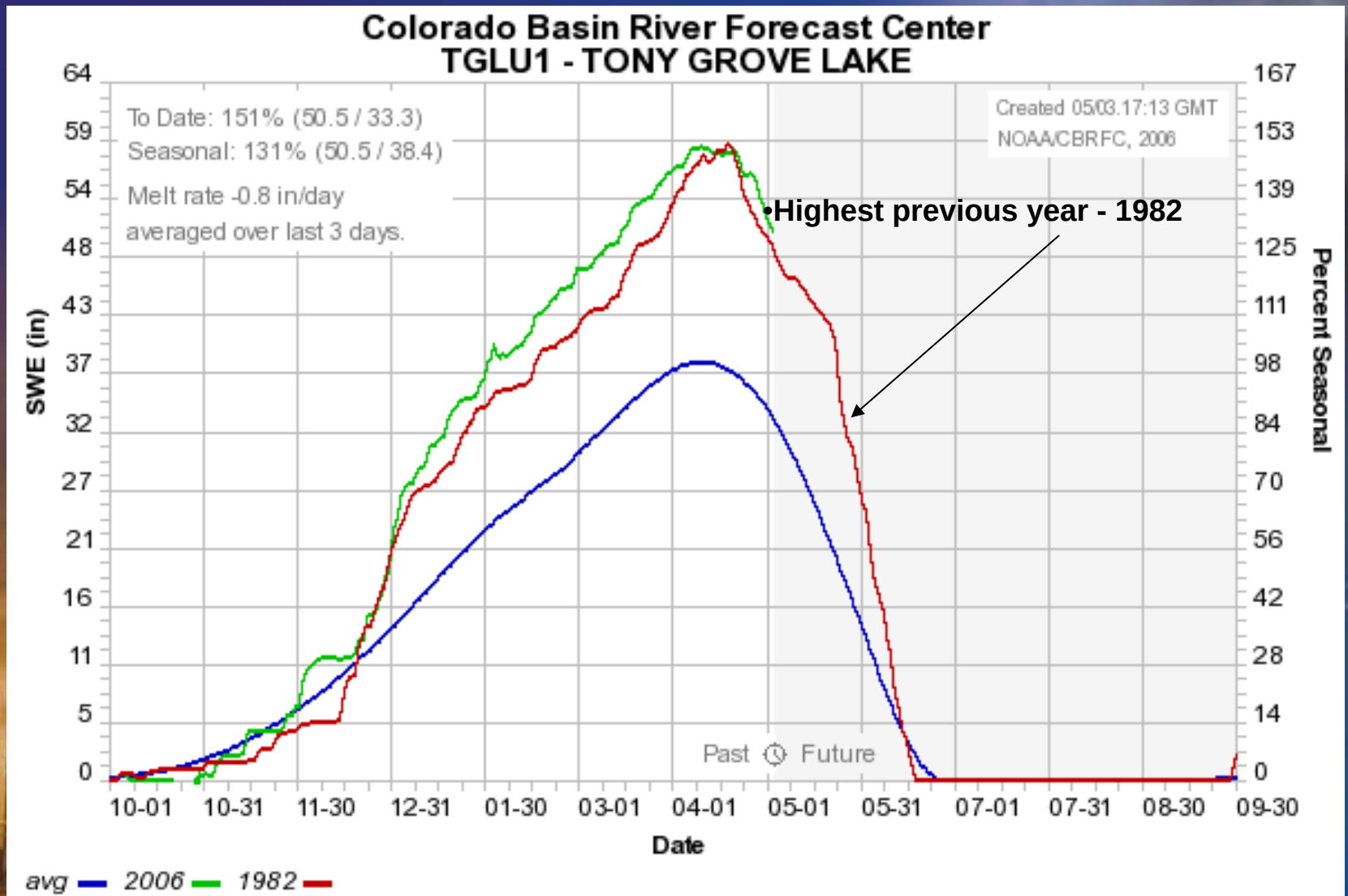
Virgin River Basin Snowpack

Compared to 2005



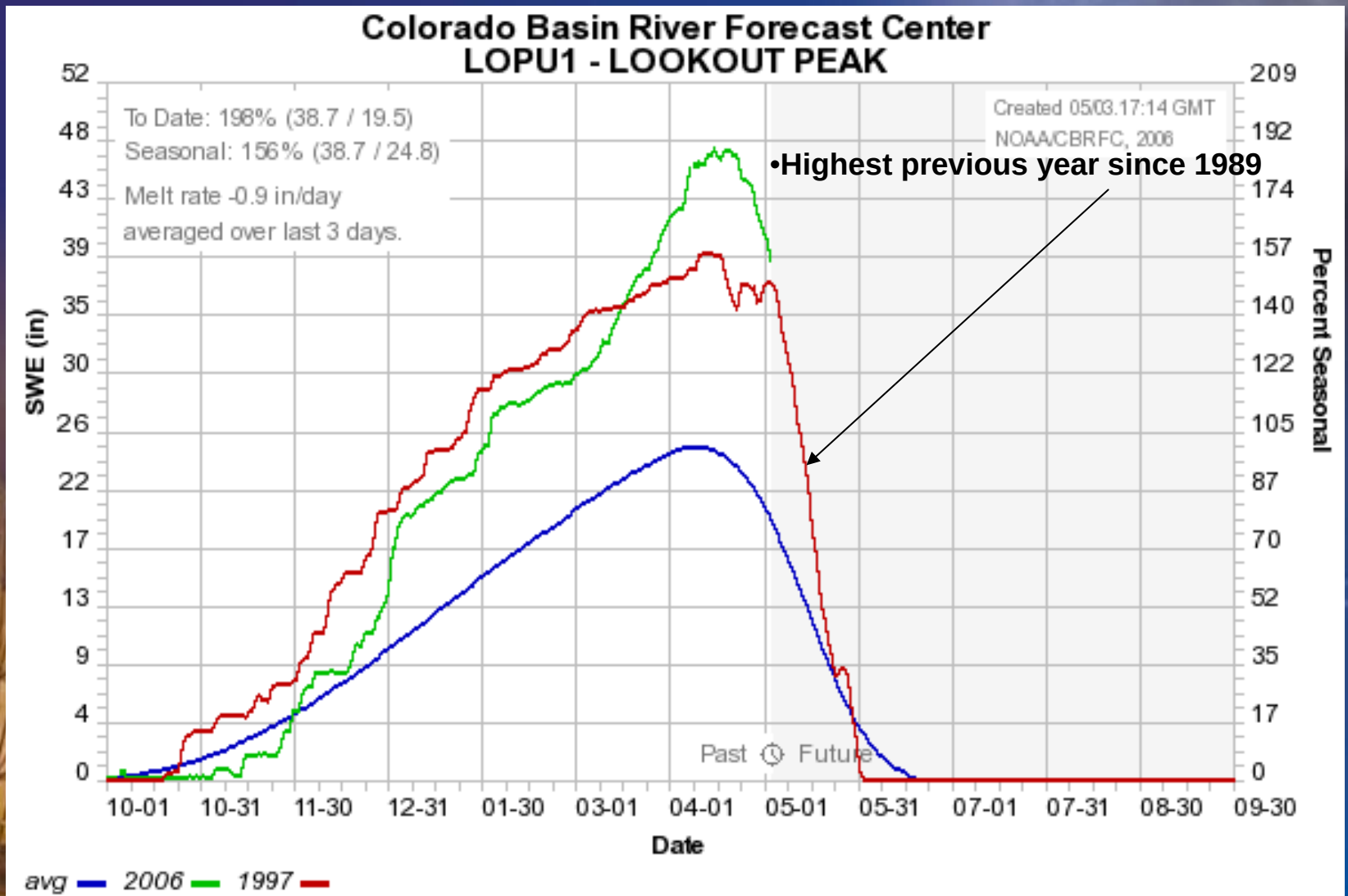
Logan River Basin Snowpack

Compared to 1982



City Creek River Basin Snowpack

Compared to 1997

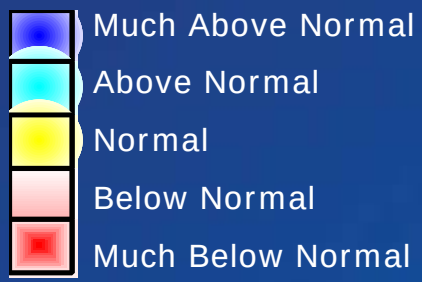


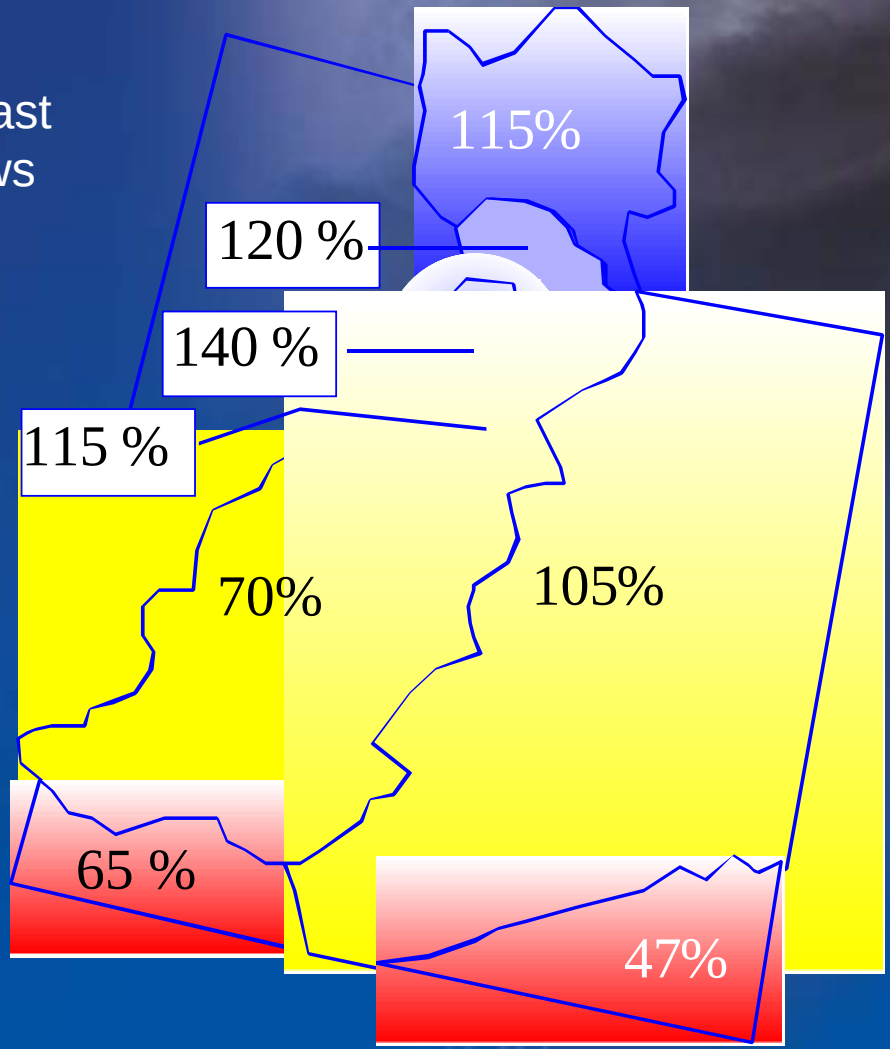
Hydrologic Outlook

- Water Supply

Forecasted Utah Spring Snowmelt Runoff Volumes

May 1st 2006
April Through July Volume Forecast
Percent of 30 Year Average Flows
Utah Area River Basins





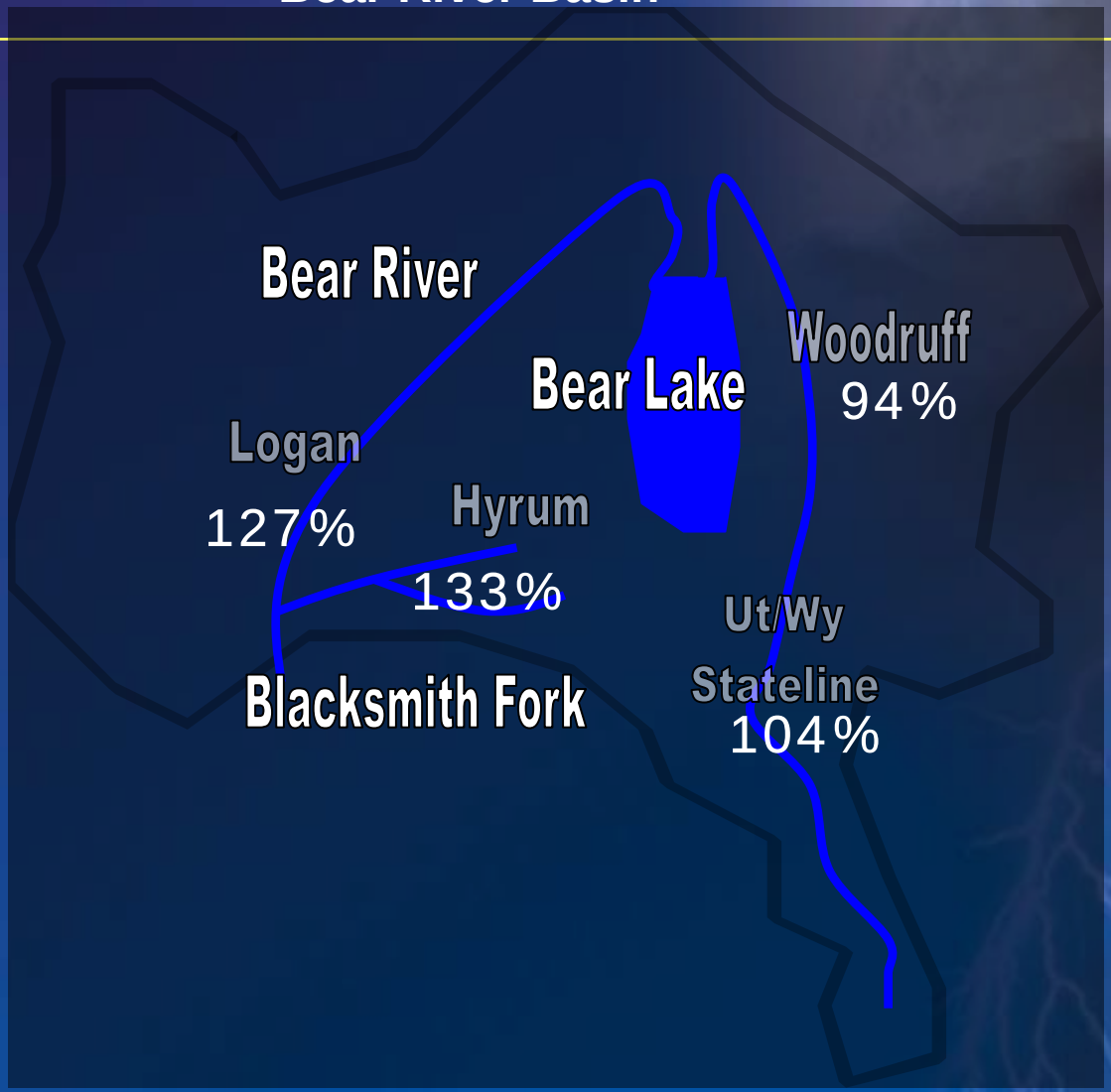
Forecasted Utah Spring Snowmelt Runoff Volume

May 1st 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

Bear River Basin



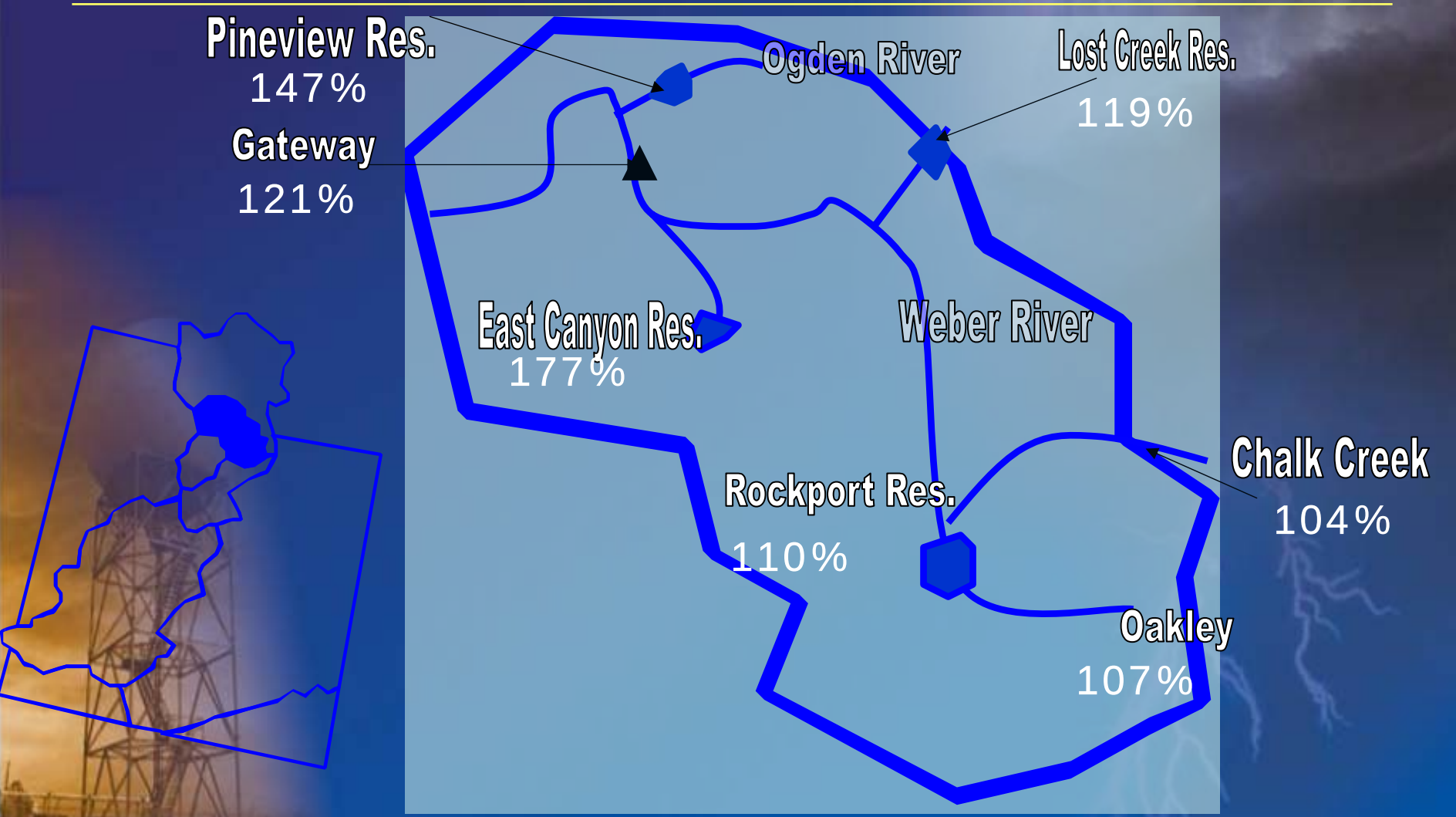
Forecasted Utah Spring Snowmelt Runoff Volume

May 1st, 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

Weber River Basin



Forecasted Utah Spring Snowmelt Runoff Volume

May 1st, 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

Six Creeks River Basin

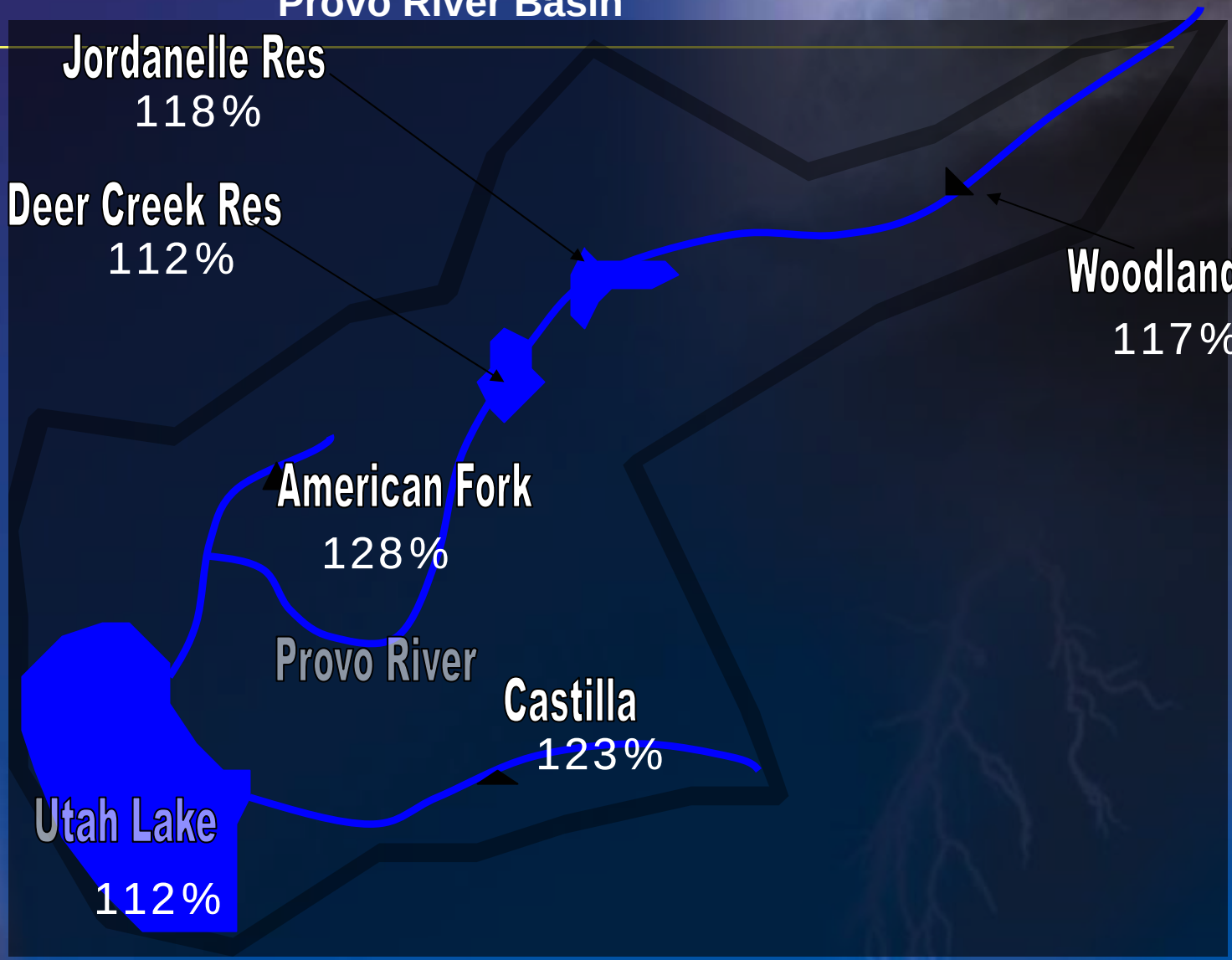
Forecasted Utah Spring Snowmelt Runoff Volume

May 1st, 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

Provo River Basin



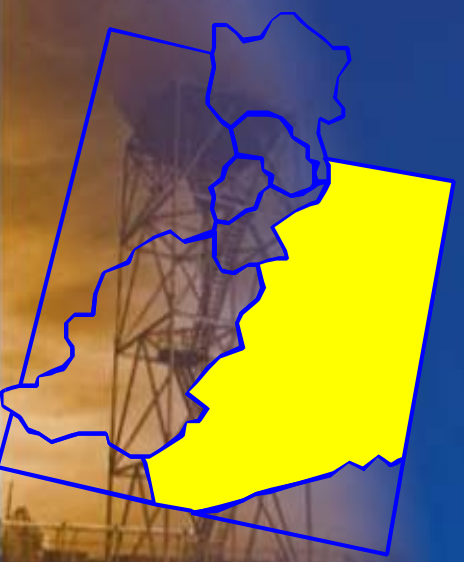
Forecasted Utah Spring Snowmelt Runoff Volume

May 1st, 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

Green River Basin



Strawberry Res. 105%

Red Fleet Res. 86%

Flaming Gorge Res. 92%

Upper Stillwater 109%

Starvation Res. 106%

Tabiona 101%

Moon Lake 107%

Scofield Res. 109%

Duchesne 106%

Myton 94%

Randlett 89%

Price River

Green River 93%

Colorado River

Lake Powell Res. 86%

Forecasted Utah Spring Snowmelt Runoff Volume

May 1st, 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

Sevier River Basin

Gunnison
48%
Ephraim Creek
Salina Creek
Sevier Lake
Sevier River
Clear Creek
Sevier
80%
Beaver
85%
Beaver River
Minersville
63%
Piute Res.
71%
79%
63%
Sevier River East Fork
Kingston
Cedar City
85%
Hatch
78%

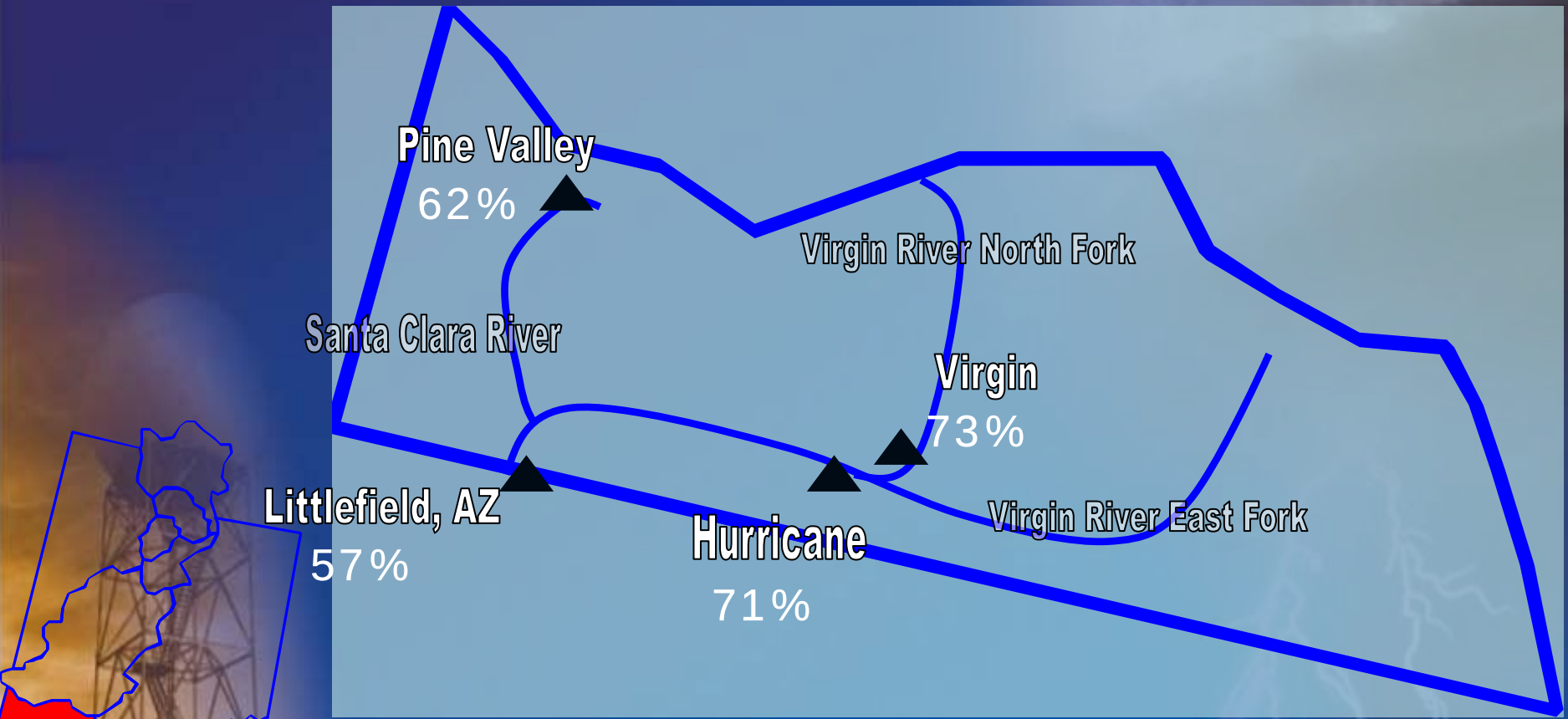
Forecasted Utah Spring Snowmelt Runoff Volume

May 1st, 2006

April Through July Volume Forecast

Percent of 30 Year Average Flows

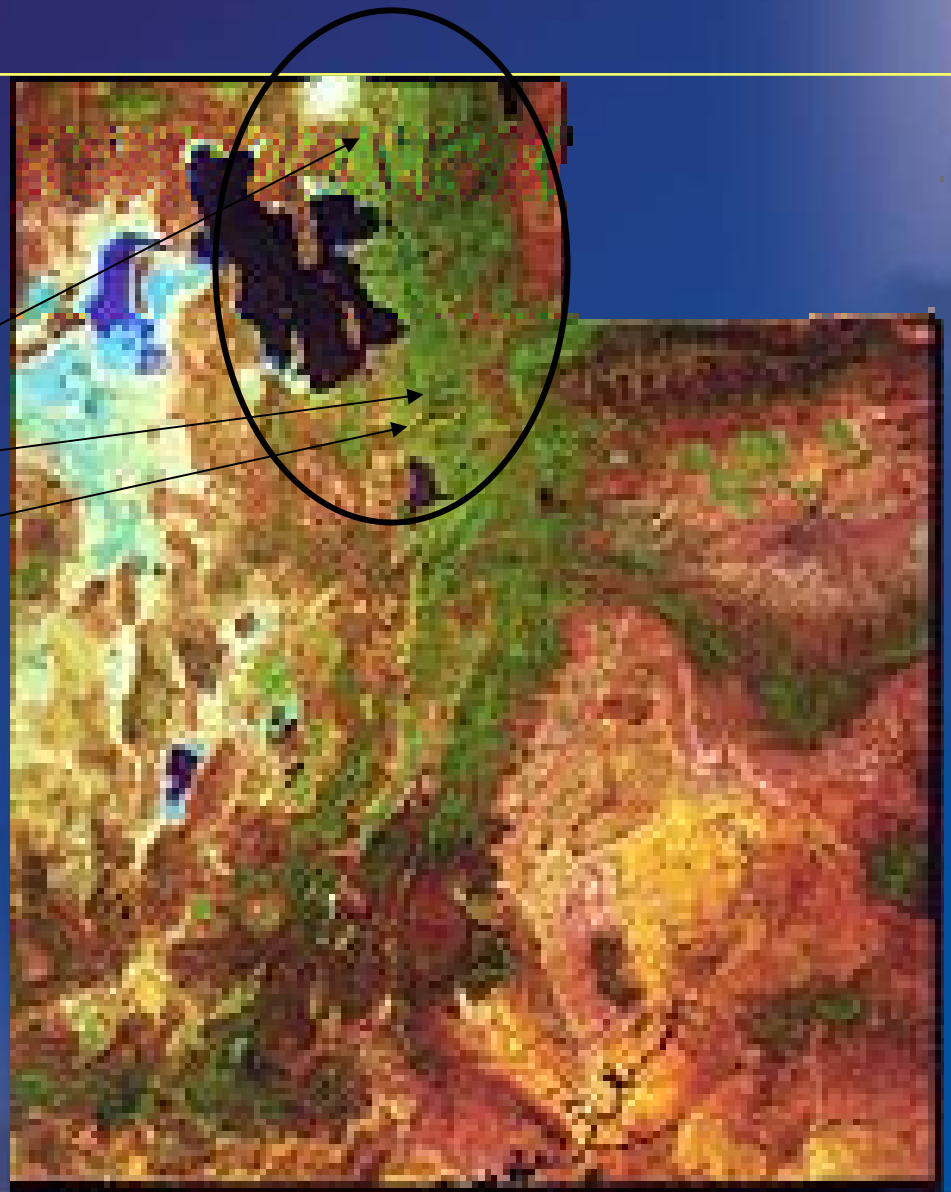
Virgin River Basin



Hydrologic Outlook

- Flood Potential

Increased Flood Potential



•Cache Valley

City Creek

•Jordan River

•However, as of early May, the flood threat has decreased due to the mild climate and absence of rainfall in the latter half of april and early May.

•Any flood scenario will most likely occur due to an intense rainfall event, an excessive warming of 90 degrees for over four days.

Hydrologic Outlook

- What if?
- What if we modeled the current snowpack and input a former year's spring climate?
- How would the rivers react?

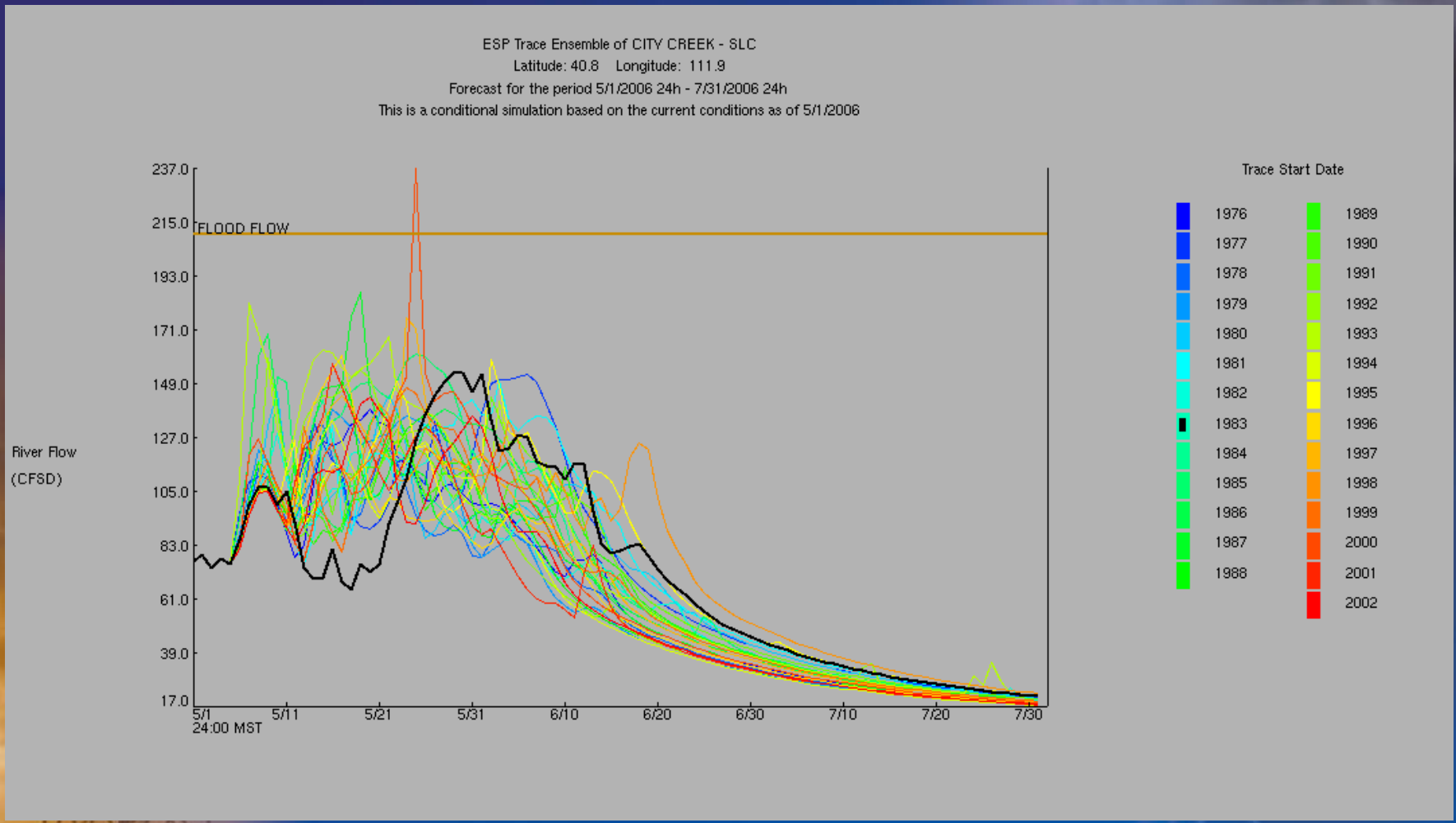
Hydrologic Outlook

- City Creek near Salt Lake City

Hydrologic Outlook

2006 City Canyon Snow vs. City Creek climate of 1983

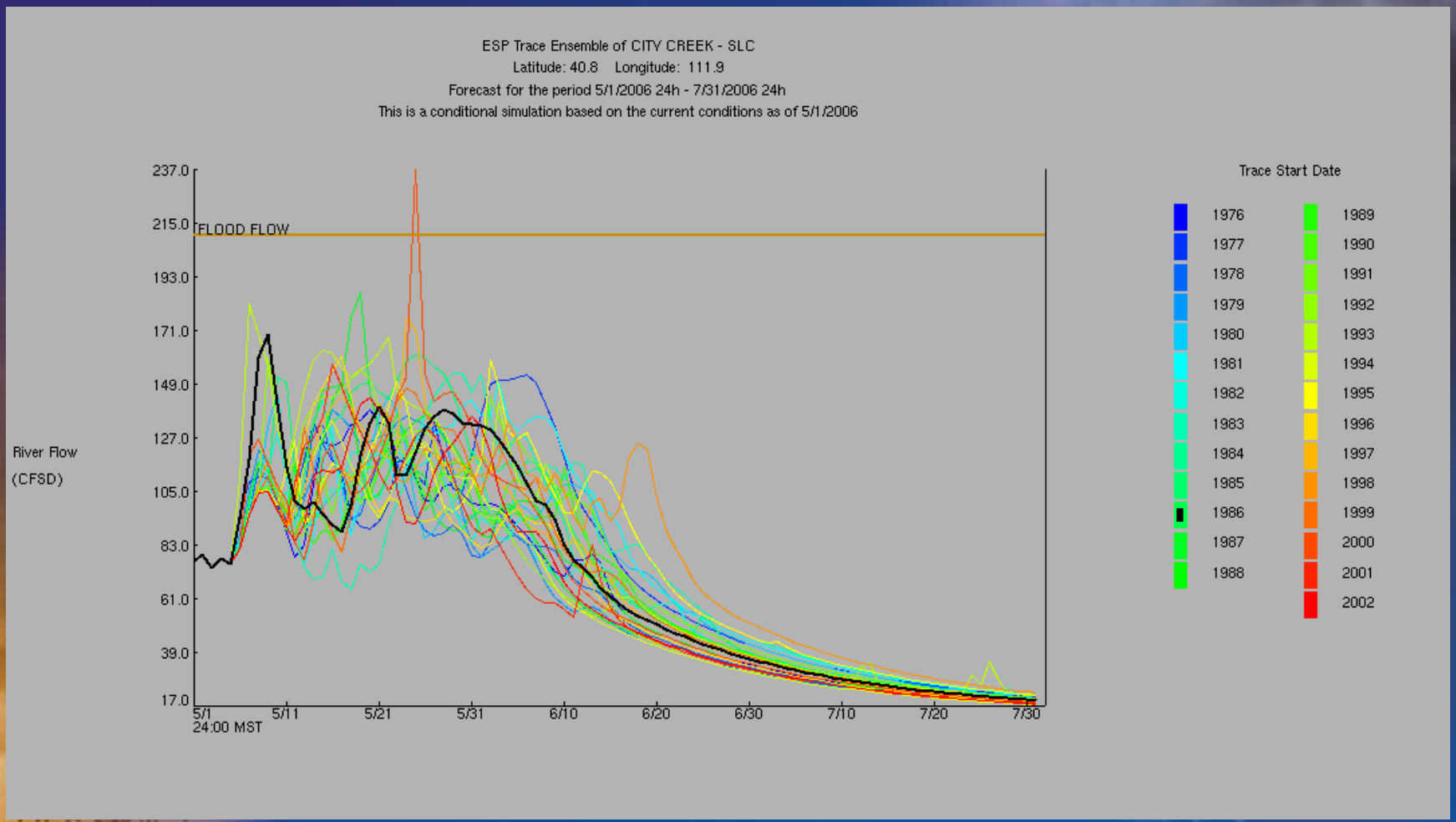
Current Flood Flow at 210 cfs



Hydrologic Outlook

2006 City Canyon Snow vs. City Creek climate of 1986

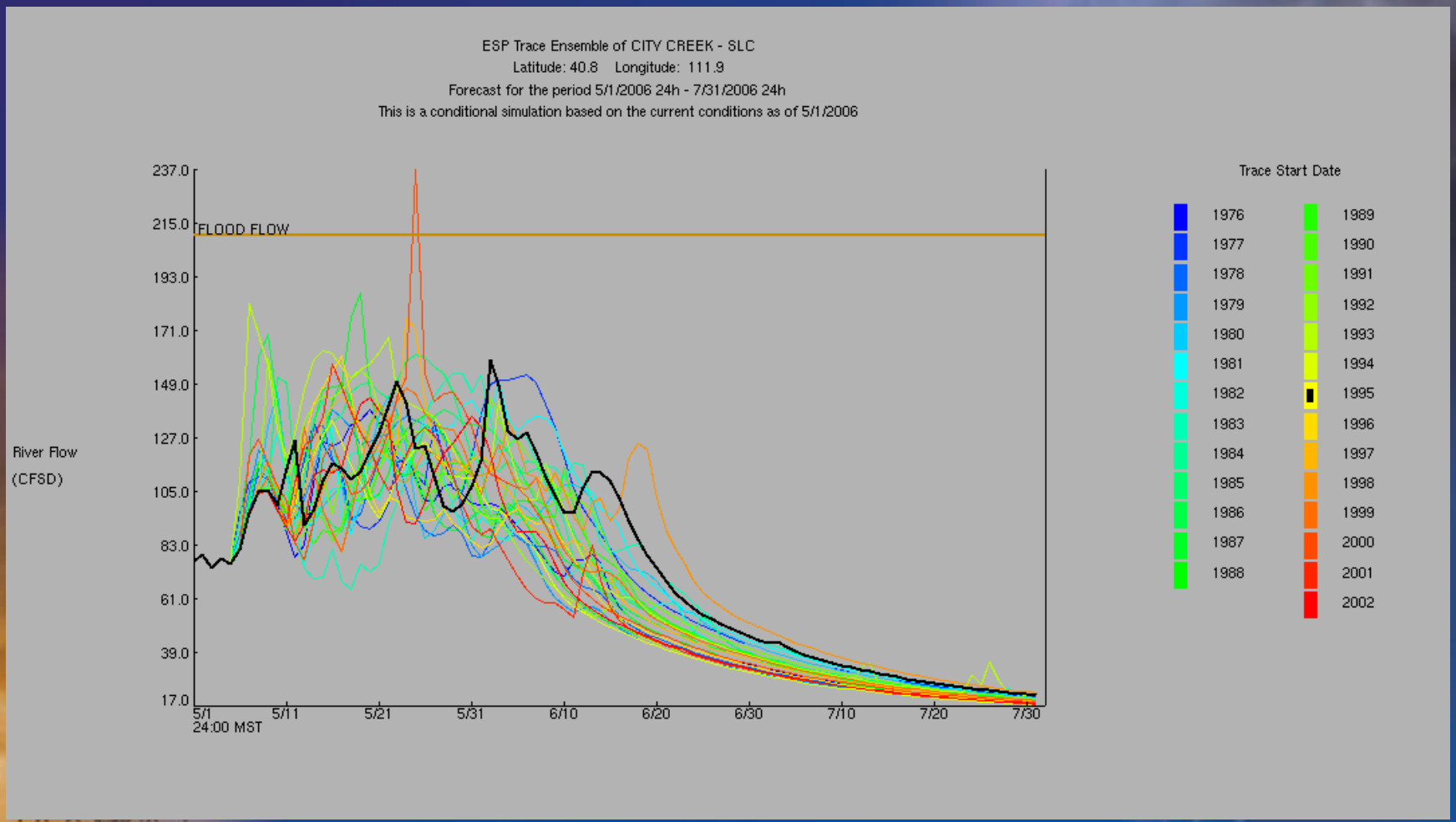
Current Flood Flow at 210 cfs



Hydrologic Outlook

2006 City Canyon Snow vs. City Creek climate of 1995

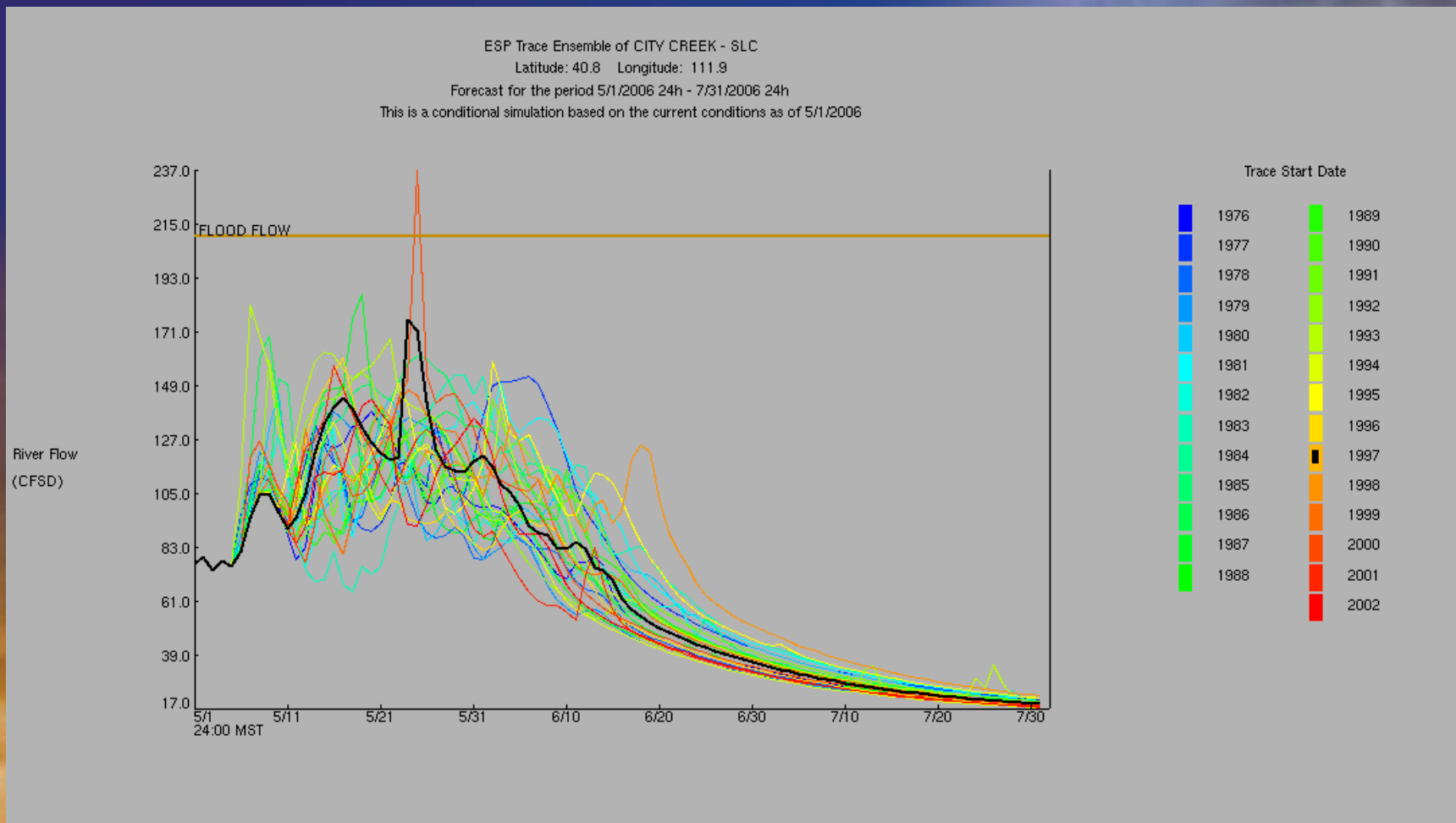
Current Flood Flow at 210 cfs



Hydrologic Outlook

2006 City Canyon Snow vs. City Creek climate of 1997

Current Flood Flow at 210 cfs



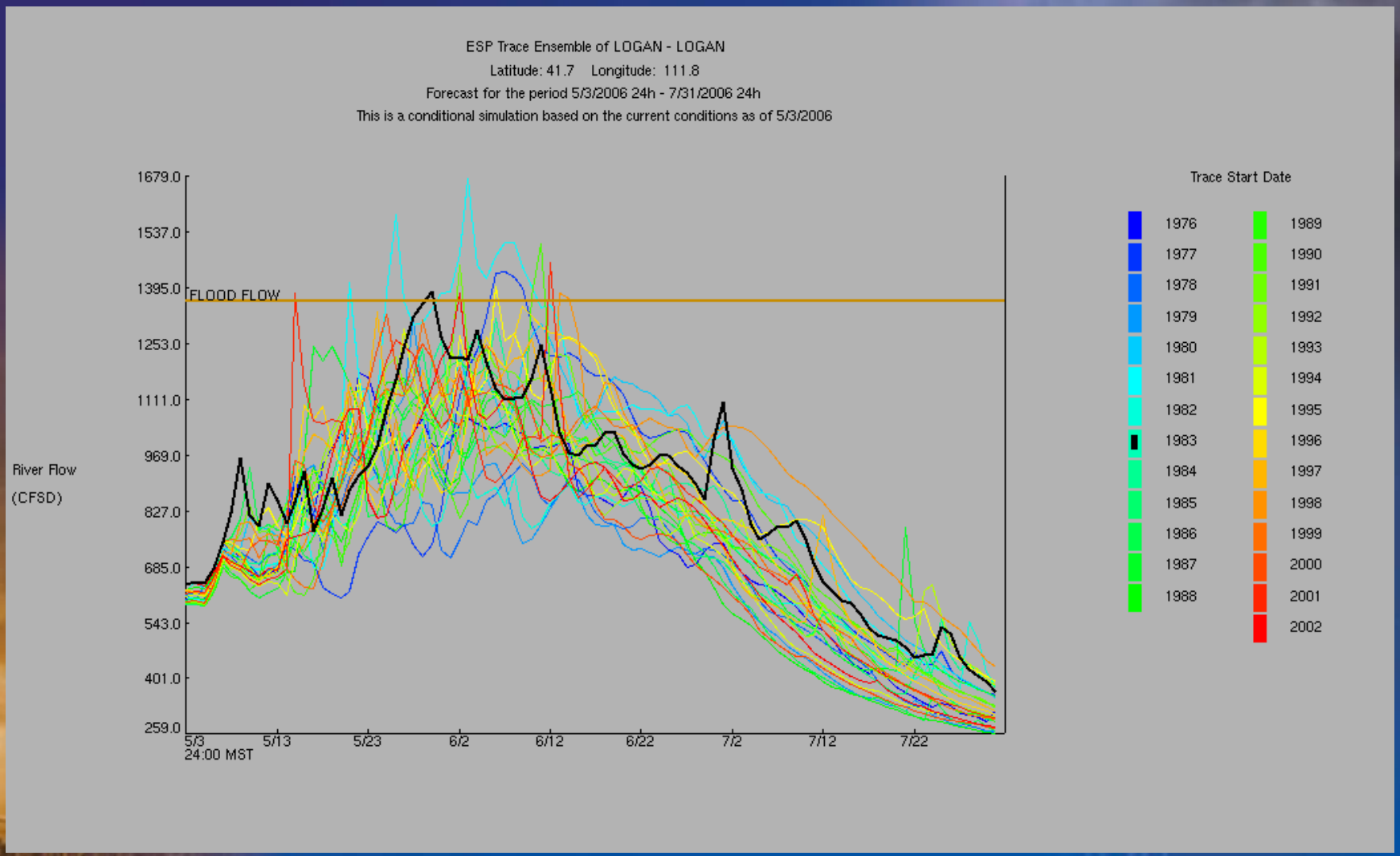
Hydrologic Outlook

- Logan River near Logan

Hydrologic Outlook

2006 Logan Snow vs. Logan Climate of 1983

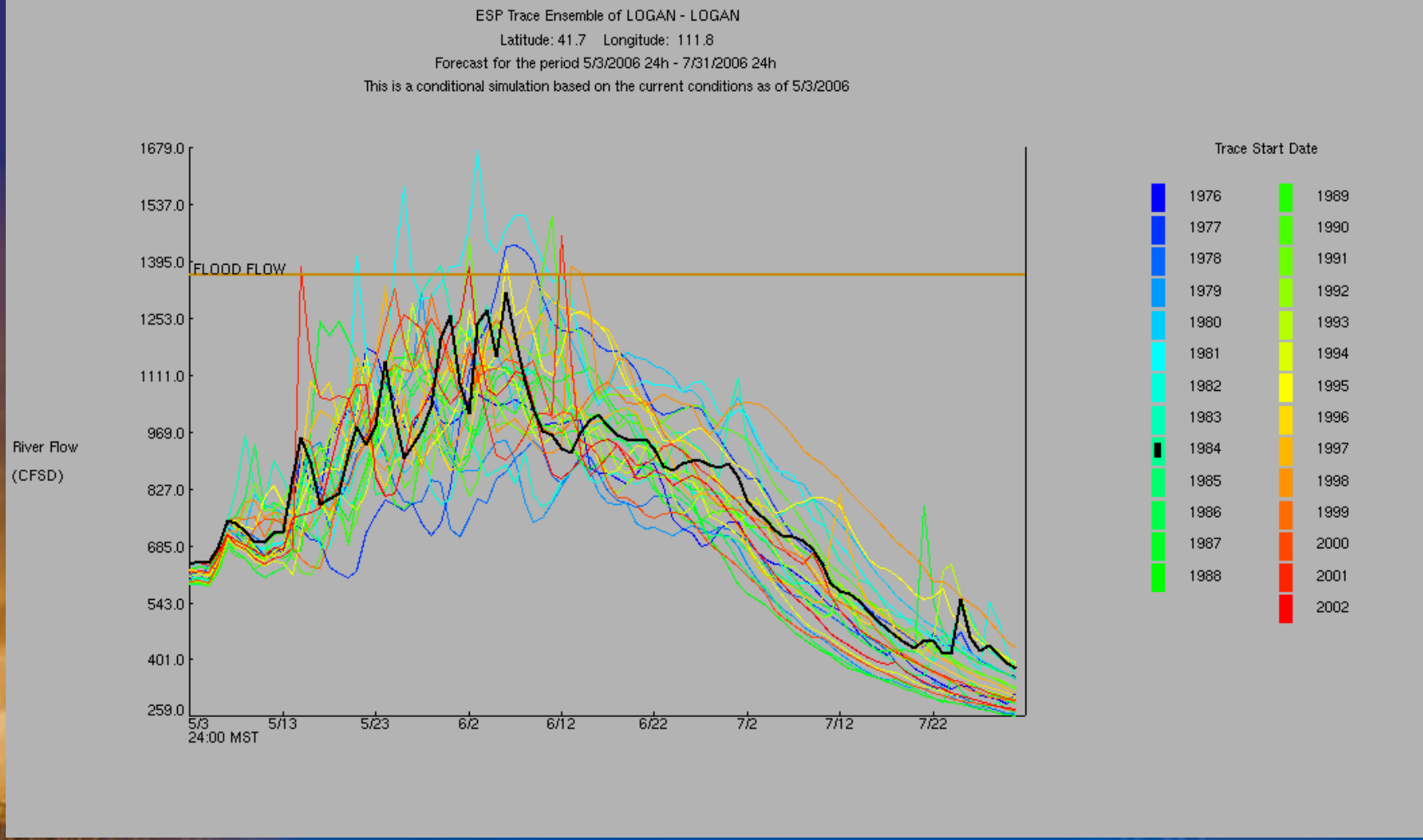
Current Flood Flow at 1360 cfs



Hydrologic Outlook

2006 Logan Snow vs. Logan Climate of 1984

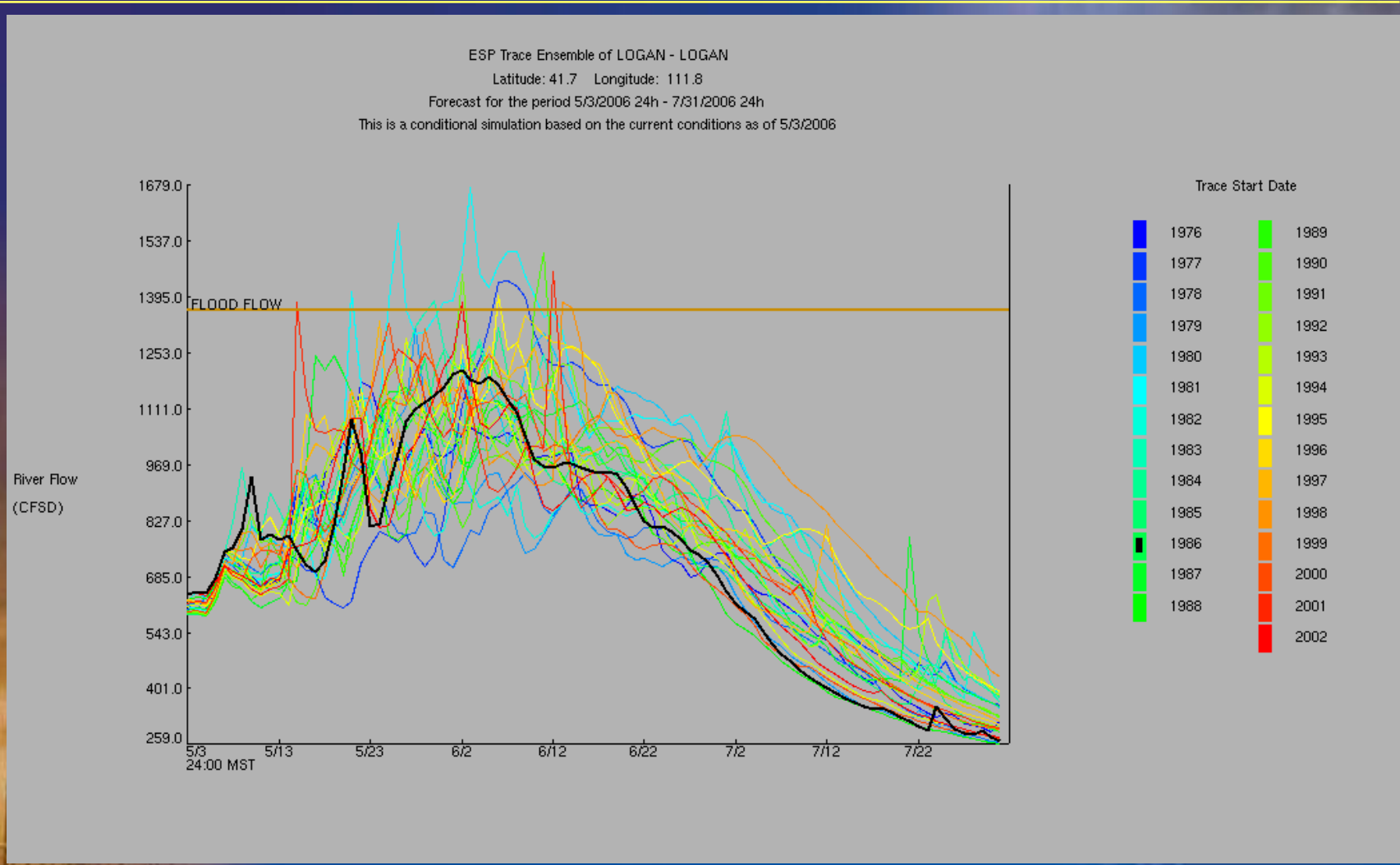
Current Flood Flow at 1360 cfs



Hydrologic Outlook

2006 Logan Snow vs. Logan Climate of 1986

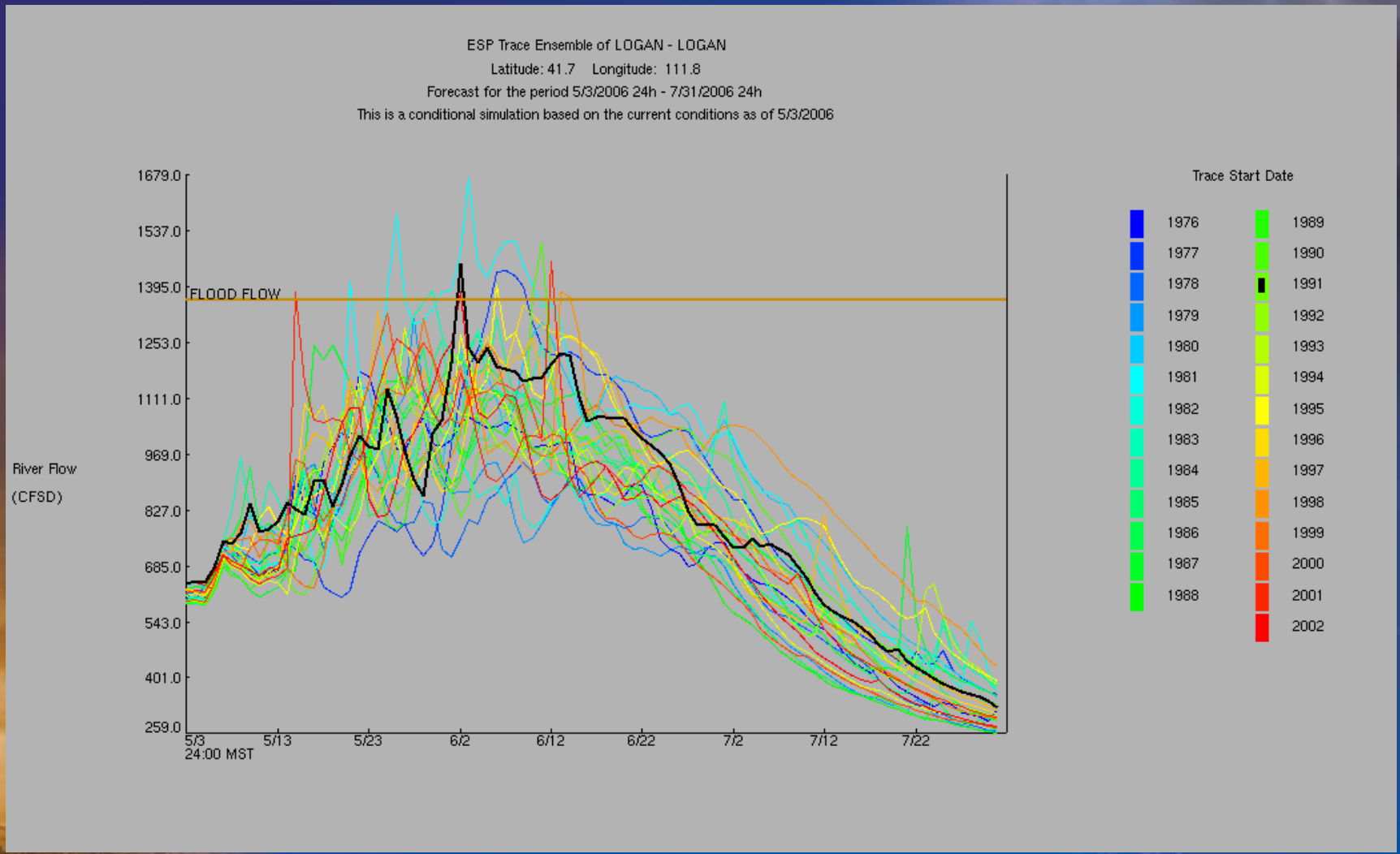
Current Flood Flow at 1360 cfs



Hydrologic Outlook

2006 Logan Snow vs. Logan Climate of 1991

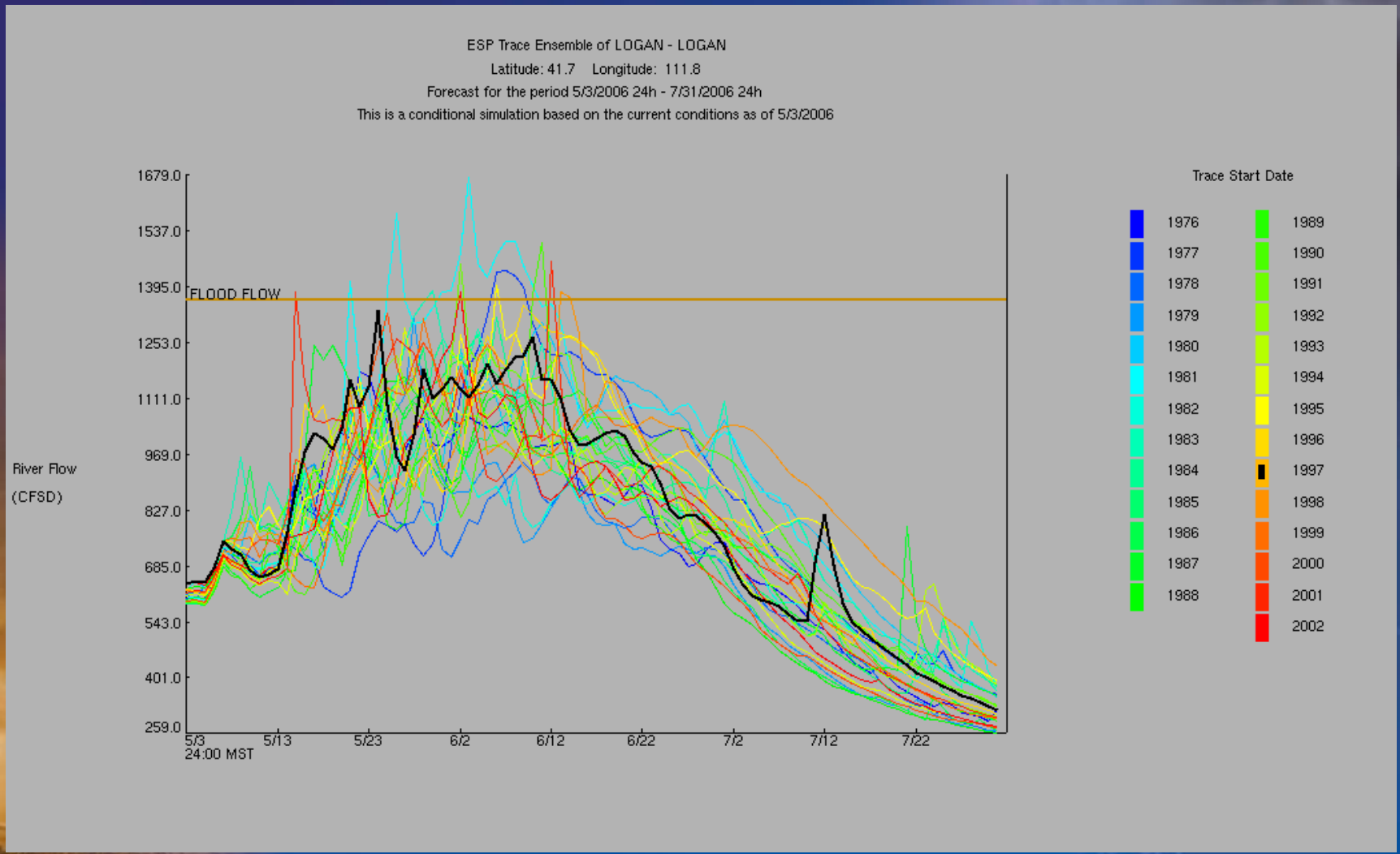
Current Flood Flow at 1360 cfs



Hydrologic Outlook

2006 Logan Snow vs. Logan Climate of 1997

Current Flood Flow at 1360 cfs



Hydrologic Outlook

- Peak Flow Forecast

Hydrologic Outlook

Great Basin Peak Flow Forecasts

Mean daily flows in cubic feet per second (cfs)

STATION NAME	Historic Peak	Average Peak	Flood* Flow	2005 Peak	2005 Date	2006 Forecast Exceedance Probability 90%	75%	50%	25%	10%	Normal time of peak
BEAR - UTAH-WYOMING STATELINE, NR	2,680	1,610	4,400	1,820	5/04	1,380	1,480	1,650	1,800	1,920	5/22 - 6/14
LOGAN - LOGAN, NR, STATE DAM, ABV	1,870	985	1,360	1,230	5/25	1,100	1,200	1,300	1,430	1,520	5/18 - 6/10
BLACKSMITH FORK - HYRUM, NR, UP&L DAM	1,530	490	850	980	4/28			660	750	800	4/24 - 5/20
WEBER - OAKLEY, NR	4,170	1,625	2,400	1,620	6/18	1,250	1,550	1,800	2,100	2,300	5/24 - 6/16
CHALK CK - COALVILLE	1,420	600	1,900	720	5/21	400	500	700	850	1,100	5/5 - 5/31
PROVO - WOODLAND, NR	2,530	1,685	3,150	1,750	6/01	1,200	1,350	1,500	1,800	1,900	5/11 - 6/6
LITTLE COTTONWOOD CK - SALT LAKE CITY, NR	762	470	800	451	6/24	540	590	630	670	730	5/23 - 6/20
BIG COTTONWOOD CK - SALT LAKE CITY, NR	980	430	800	607	6/22	400	460	550	600	650	5/18 - 6/9
MILL CK - SALT LAKE CITY, NR	153	65	180	80	5/21	70	75	85	100	120	5/18 - 6/10
PARLEYS CK - SALT LAKE CITY, NR	605	180	350	187	5/21			180	230	280	4/23 - 5/22
EMIGRATION CK - SALT LAKE CITY, NR	164	55	130	42	5/18			150 CFS on 4/16			4/11 - 5/19
CITY CK - SALT LAKE CITY, NR	322	90	210	120	5/24	100	130	160	180	210	5/12 - 6/1
SEVIER - HATCH	1,740	495	1,200	1,740	6/03		400	550	600	700	5/6 - 6/2

N/A - NOT AVAILABLE (NOT A FLOOD FORECAST POINT OR NO FORECAST PROCEDURE EXISTS)
** Flood flow is for current year only and is an instantaneous value*

Hydrologic Outlook

- Short Term Forecast

Hydrologic Outlook

Short Term Forecast

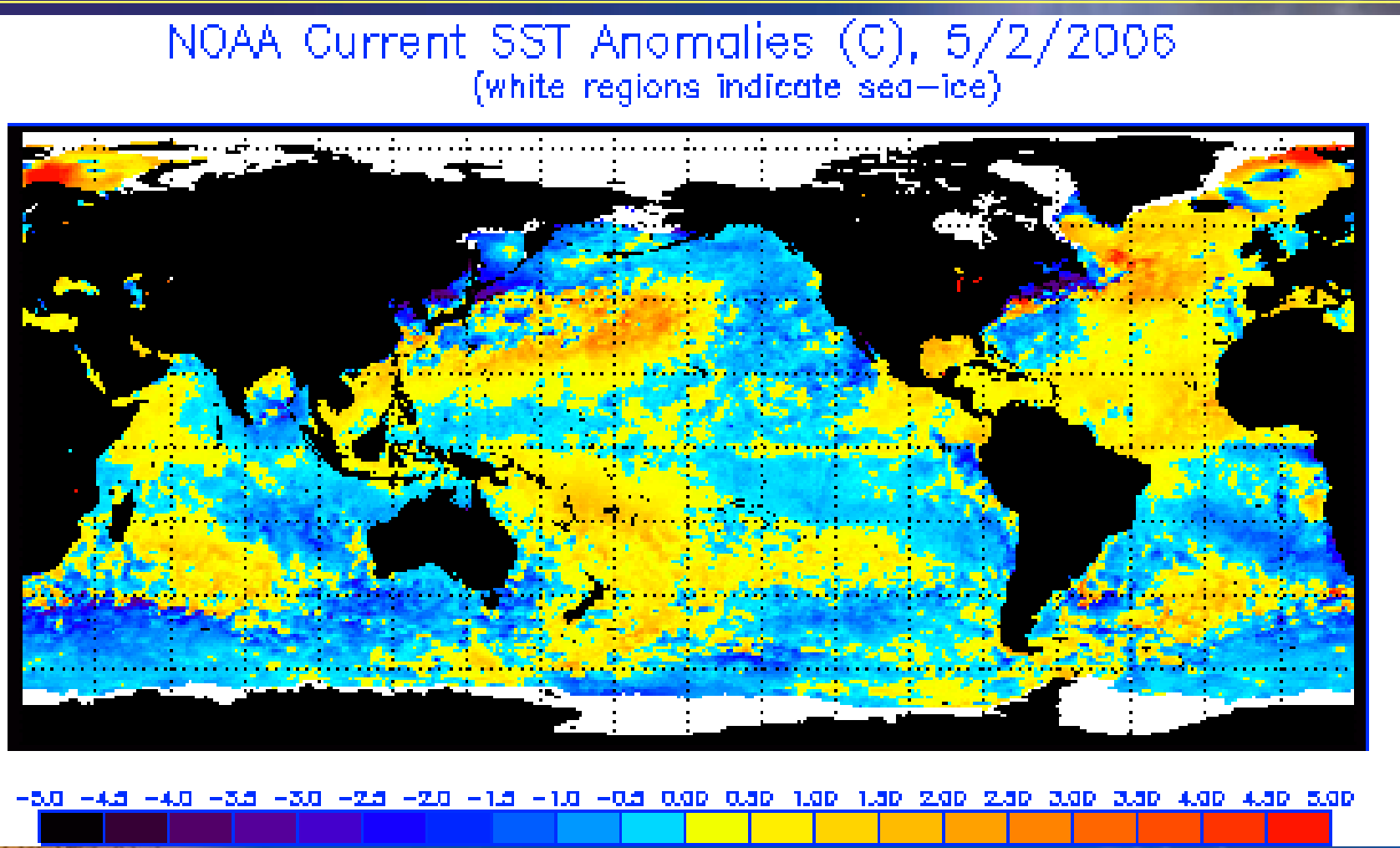
- Temperature through May 10th, 2006
  - Cooler temperature levels
- Precipitation through April 15th, 2005
  - Below average amounts of precipitation through early May

•Click for Satellite

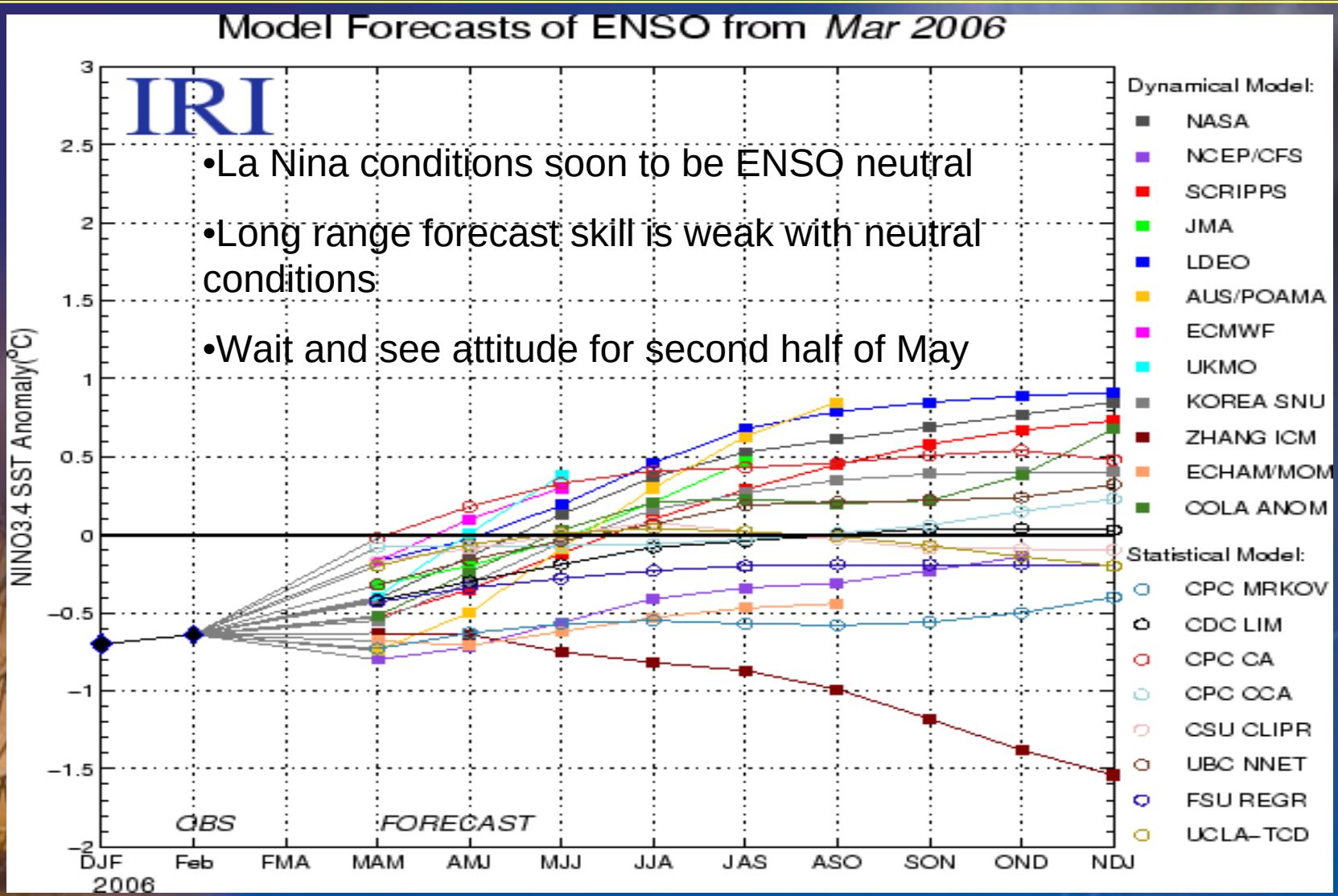
Hydrologic Outlook

- Long Range Forecast

Recent Evolution of Equatorial Pacific SST Departures



Forecasted Evolution of Equatorial Pacific SST Departures



Spring Climate

- Spring climate will dictate runoff scenario
  - Soil moisture is drying out with this mild dry airmass
  - This is reducing the runoff efficiency
- Cool wet spring will enhance runoff efficiency and heighten flood potential
  - Mild climate is dominating the spring runoff
  - Large snowpack will produce above normal runoff
  - Our wet sponge is drying out
  - Second half of May is unknown
- Warmer drier spring will reduce water volume and lessen flood potential
  - Current conditions are ideal to reduce flood threat
  - Slow melt due to mild climate and absence of rainfall is inefficient melt process
  - Less efficient melt process
  - We are living this scenario as of early May

Forecast Updates

Contact the CBRFC (Colorado Basin River Forecast Center)

- Forecast Services
- Up to the minute forecast updates
- Hourly, daily, and monthly time scales
- Reservoir inflow
- Peak flow forecasts

- Contact
- Michelle Schmidt
- Hydrologist in Charge
- 801-524-5130
- Steve Shumate
- Development and Operational Hydrologist
- 801-524-5130

- www.cbrfc.noaa.gov

Forecast Updates

Contact the National Weather Service Forecast Center (Weather Info)

- Forecast Services
- Flood Forecasts, Advisories, Watches, and Warnings
- Weather Forecasts
- Radar, satellite, weather station data
- Observed conditions
- Climate data

- Contact
- Brian McInerney
- Hydrologist
- 801-971-2033

- http://www.weather.gov/

Contact Information

Additional Information

Contact

Brian McInerney
Hydrologist
National Weather Service

801-971-2033 c

brian.mcinerney@noaa.gov